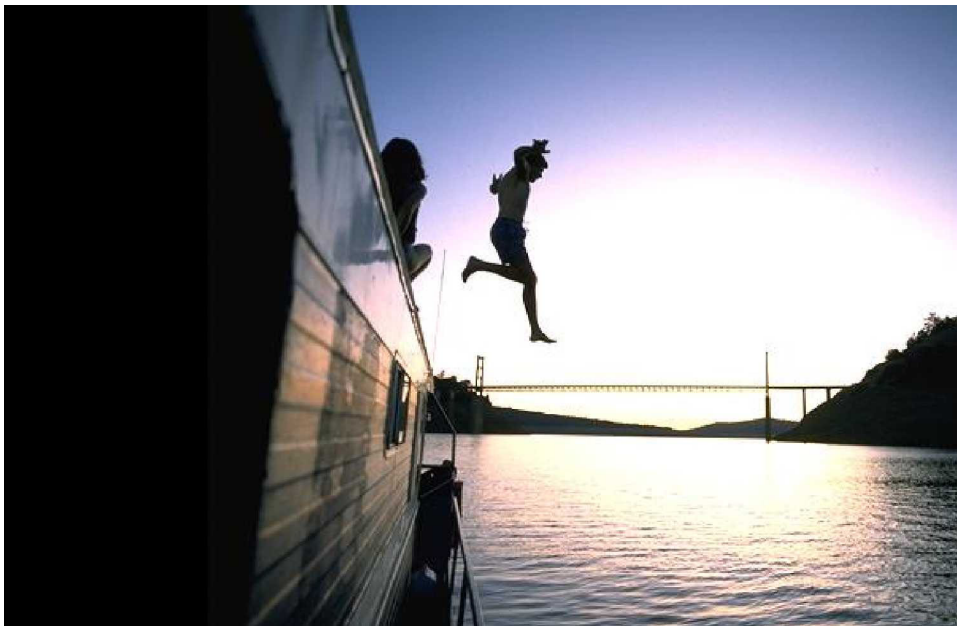
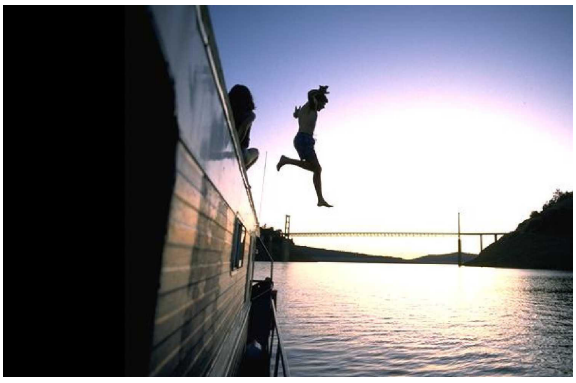
State of California
The Resources Agency
Department of Water Resources
Environmental Services Office

Comparative Inventory of Recreation Facilities at California's Largest Reservoirs, 2000



December 2001

GRAY DAVIS Governor State of California	MARY D. NICHOLS Secretary for Resources The Resources Agency	THOMAS M. HANNIGAN Director Department of Water Resources



COVER PHOTO: Vacationers jumping from a houseboat on Lake Oroville.

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FOREWORD

The California Department of Water Resources is busily preparing its first application for relicensing to the Federal Energy Regulatory Commission. The Relicensing Application for Project 2100, the Feather River Project (which includes Lake Oroville), must be filed no later than January 31, 2005. Before that date, the Department faces a great challenge in assessing and balancing the many benefits and environmental impacts of these facilities near the head of the State Water Project. The participation of a variety of stakeholder groups will continue to play an important role in a working dialogue that will ensure that Project 2100 provides the optimum benefits for all Californians.

This inventory is intended to be a tool to help the Department assess how the existing recreation facilities at and around Lake Oroville compare to those at other large reservoirs in California. We hope that compilation and dissemination of this information will give recreation planners additional valuable information with which to continue recent progress toward finding a balanced solution to recreation and other issues at Lake Oroville. The vision for future recreation development varies, and it is important to the Department that Project recreation facilities meet established standards and the related expectations of the people of California. This report also provides a modern benchmark from which to evaluate future changes in recreation development, use, demand, and trends.

Key to fair evaluation of Project 2100 benefits and impacts will be the compilation of complete and accurate information and scientific data. These data include information necessary for the future completion of a recreation plan, a document required by FERC to ensure that recreation benefits are developed and the needs of the surrounding communities and other stakeholders are met, consistent with other Project purposes. Since some of the facilities reviewed in this document are regulated by FERC, this report will be a helpful guide through the relicensing process to ensure that the "yardsticks" used by that agency are considered when a new recreation plan is ultimately developed.

The rich variety of recreation opportunities found at the Lake Oroville Complex compares favorably with that found at other California reservoirs, and attracts visitors from all walks of life. We are confident that Project 2100 will continue to be a superior example of the benefits of wise water development through and beyond the term of License renewal, as the Department plans for enhancement and future development of recreation resources associated with State Water Project facilities.

Barbara J. McDonnell, Chief
Environmental Services Office

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Acknowledgements

The “Select A Lake” website, operated by “Dean’s Angler Net” (http://www.anglernet.com/web/selectlk.htm) was a valuable source of summary information about many of the reservoirs discussed herein. For use of this reference resource, the Department is grateful. The Department also wishes to thank staff of the agencies whose facilities are described herein, for their review of earlier drafts of respective sections of this report. The editorial review of select portions of this report by DWR Environmental Services Office staff Lauren Buffaloe, Ted Sommer, and Matt Nobriga is also acknowledged.

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EXECUTIVE SUMMARY

There are about 1,400 reservoirs in California. Of these, 11 are larger than 1,000,000 acre-feet, and an additional three have storage greater than 500,000 ac-ft. A few more are paired as parts of local systems and combine to store more than 500,000 ac-ft in a locality. This report inventories and compares the amount of recreation development and use occurring at the largest California reservoirs, all north of the Tehachapi Mountains.

The purpose of this compilation is to aid in the assessment of and planning for appropriate additional development at Lake Oroville, currently involved in the Federal Energy Regulatory Commission's license renewal process. One relicensing-related study will collect and review information about regional recreation opportunities, and information in this report will serve as a reference tool for that purpose. This report may also be useful to recreation planners reviewing the status of reservoir-based recreation elsewhere.

Lake Oroville is the second-largest reservoir in California and the largest non-federal one. The Lake Oroville State Recreation Area and adjacent recreational lands, which offer a variety of traditional recreation facilities (boat ramps, campsites, picnic areas), also offer several recreation features uncommon or unique among California's large reservoirs: floating campsites, a 41-mile loop bicycle trail, expansive equestrian facilities, and other facilities and opportunities.

The facilities at Lake Oroville compare favorably with those at other large California reservoirs. Attendance at LOSRA facilities, as compared to other locations, also appears to be modest (averaging about 700,000 recreation-days per year). The availability and variety of facilities, and the modest demand, suggest that existing Lake Oroville facilities have the capacity to accommodate future increases in attendance.

INTRODUCTION

Recreation development at Lake Oroville has been a contentious issue for more than a decade. Many claims have been made as to what development is necessary, appropriate, or otherwise desirable at these State Water Project facilities. Guided by the Davis-Dolwig Act, the California Departments of Water Resources, Parks and Recreation, and Fish and Game have endeavored to meet the needs of the people and wildlife of California by planning and providing quality recreation opportunities and resource protection. The California Department of Boating and Waterways has also made invaluable contributions toward developing facilities to meet local needs.

In 1994, the Federal Energy Regulatory Commission, responding to criticism from many parties, ordered DWR (licensee of FERC Project № 2100) to construct additional facilities at the Lake Oroville State Recreation Area and at adjacent Project 2100 lands. Recently completed, the fruits of Order 2100-054 have enhanced the variety and quality of recreation opportunities at LOSRA to among the best in California. The timing of recent facility completion comes as DWR is preparing its application for renewal of FERC License 2100, which must be filed by January 31, 2005. The important role that recreation planning is afforded in the relicensing process will require collection and assessment of a large amount of objective and subjective information, in order to prepare a complete application.

This report is intended as an objective review of major reservoir-based recreation development throughout Northern and Central California. It is believed to be a first-of-its-kind compendium of comparable information describing established recreation facilities. The 13 largest reservoirs in the State, each providing over 500,000 ac-ft of storage when full, plus five smaller reservoirs that are associated with another and combine to exceed this storage threshold, are reviewed and summarized in this report (Figure 1, Table 1). Reservoirs of large size pose unique management challenges related to dispersed access and the logistics of operations and maintenance over large

geographic areas. Lake Oroville is the second-largest reservoir, the largest non-federal reservoir, and the largest FERC-licensed facility in the State. The information for each selected reservoir is also portrayed in the context of the population base from which visitors likely come, as well as within the context of alternative and competing recreation opportunities in each local area, because FERC Guidelines explicitly consider demand and need when requiring new recreation facilities. To some degree, this report can also be considered a measure of "normal" and "reasonable" standards of development to which residents of California have become accustomed.

The reservoirs reviewed in this report vary in ownership and primary purpose. Some are regulated (licensed) by FERC and others are exempt (either because they are owned and operated by a federal agency, or because they do not have hydroelectric benefits). Recreation development at many federal reservoirs has been guided by the Federal Water Project Recreation Act. In any case, existing facilities can be assumed to represent standards that have been applied in the past, and should be a guide toward the development of necessary and reasonable development in the future.

A wide variety of sources were researched for this report. Site visits to all the reservoirs occurred during the first half of 2000. Managing agencies, concessionaires, and local Chambers of Commerce were interviewed as appropriate. U.S. Census Bureau 1990 population information, organized by Zip Code, was used to estimate the number of people likely "served" by each reservoir's recreation facilities. Contemporary California State Automobile Association maps were reviewed as an insight to alternative recreation destinations surrounding (presumably competing with) each reservoir. A large amount of information resides on the World Wide Web, and useful links to additional information are presented as references.

FIGURE 1. Regional map showing general location of reservoirs discussed.

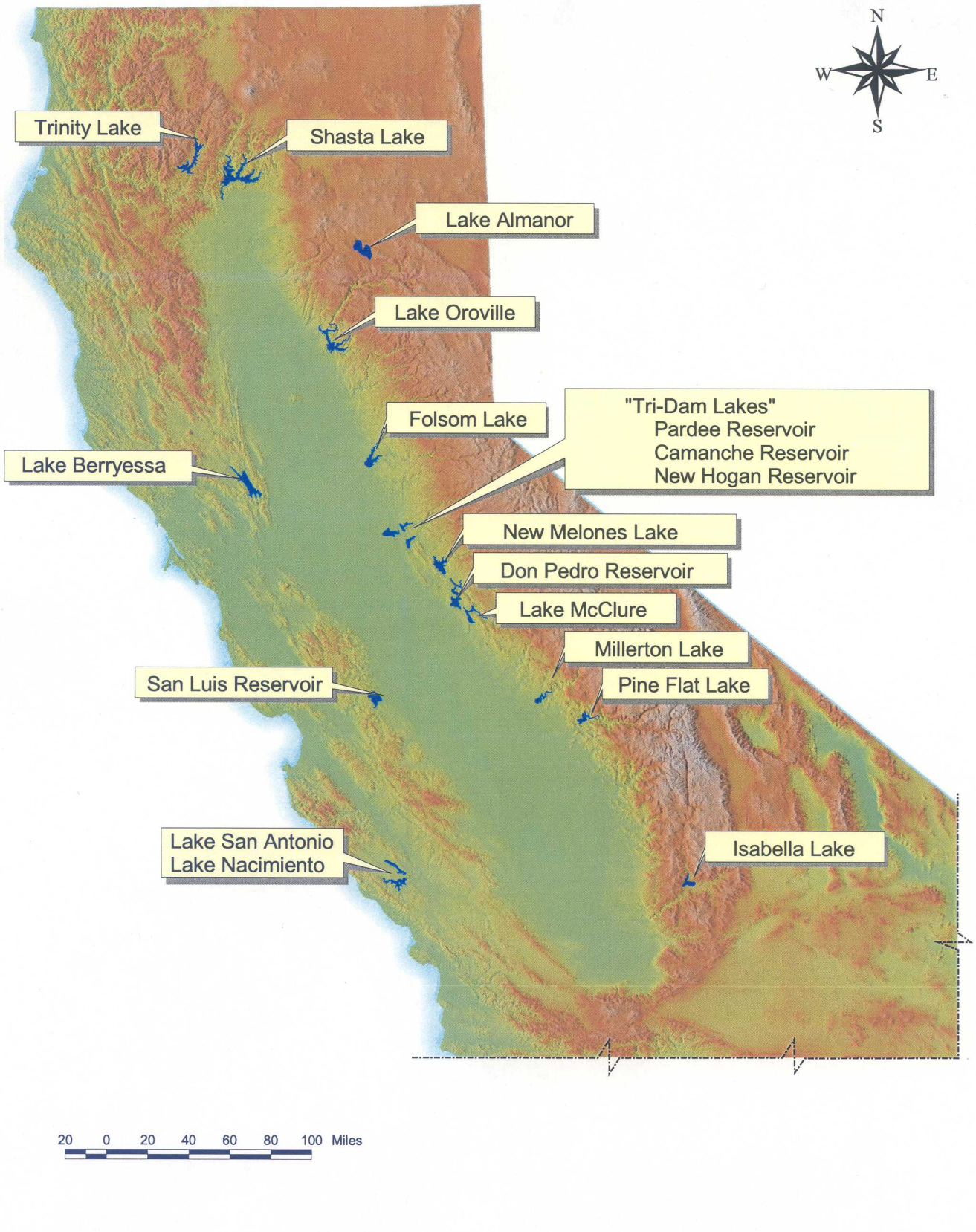

TABLE 1. Reservoir size, purpose, and operator information.

	Storage (x1,000 ac-ft)	Surface area (acres, full)	Shoreline (miles)	Elevation (feet)	Purposes*	Recreation Operator (year built)
Almanor	1,300	28,500	52	4,500	HP,R	USFS, PG&E (1927)
Berryessa	1,600	20,700	165	440	WS,R,HP	USBR Concessionaires (1957)
Don Pedro	2,030	12,960	160	830	WS,HP,FC,R	Turlock Irrigation District Subdivision (1971)
Folsom	1,010	11,400	75	475	FC,WS,HP,R	DPR (1956)
Isabella	570	11,400	38	2,600	WS,FC,HP,R	USFS (1953)
McClure	1,040	7,400	80	867	WS,HP,R	Merced Irrigation District (1967)
Millerton	520	4,900	51	570	WS,FC,HP,R	DPR (1944)
Nac./San Ant.	700	11,120	225	800	WS,EV,R,HP	Monterey Co. Water Res. Ag'y (1957, 1965)
New Melones	2,400	12,500	100	1,088	FC,WS,HP,R,EV	USACE (1979)
Oroville	**3,620**	**21,000**	**167**	**900**	**WS,FC,HP,R,EV**	**DPR, DWR (1968)**
Pine Flat	1,000	5,970	67	950	FC,WS,HP,R	USACE (1954)
San Luis	2,950	15,720	89	500	WS,HP,FC,R	DPR (1967)
Shasta	4,550	29,500	370	1,067	FC,WS,HP,R,EV	USFS (1945)
Trinity	2,590	17,280	145	2,370	WS,FC,HP,R,EV	USFS (1962)
Tri-Dams	960	14,240	140	500	WS,FC,HP,R	EBMUD, USACE (1929, 1963)

*Key to purposes, order generally infers priorities:

HP	=Hydroelectric Power
FC	=Flood Control
WS	=Water Supply
R	=Recreation
EV	=Environmental Enhancement

METHODS AND PROCEDURES

Direct comparison of reservoirs and their recreation facilities is not as simple as it may initially seem. While the purpose of this report is to provide an objective comparison, many of the "results" reported herein are inevitably subjective. For example, answering the question of whether one reservoir has more camping/picnic/marina facilities than another is difficult when differing standards of development have been accomplished, or when recreation managers allow various types of unregulated or "overflow" use. To pare the results of field evaluation to a basic level, the following methods were used and guidelines applied for various types of facilities and information.

Campgrounds and Campsites. Campgrounds exist in many different forms. Directly comparing the number of campgrounds, or the total number of sites therein, at various reservoirs can be hindered by varying levels of development, infrastructure and amenities, and other factors such as seasonal availability. As a general rule, the following summaries of campground development include only named, developed campgrounds with at least minimum improvements (table, fire pit). Some have water, even showers; others are relatively primitive but at least have distinct "sites." Not included are relatively unregulated shoreline, "back-road," or "overflow" areas where self-contained vehicles can simply park and camp (even though many of these are formally and officially named). Herein, mention of the latter areas and opportunities are limited to the introductory summary page for each reservoir.

Picnic Units and Day Use Parking. Day use activities occur at a broad range of developed and undeveloped locations. Level of development is not generally an indicator of fee requirements nor even the relative amount of use. During this inventory, individual features were counted. Emphasis is given in this report to number of picnic units (usually a table with a fire pit, but sometimes a pair of tables, or without fire pit) and parking spaces associated with those facilities (both paved and unpaved). (The

parenthetical qualifications necessary are a good example of how hard it is to directly compare the relative development of day use areas!) In some case these picnic opportunities were at a day use area with a beach or lawn, in other cases they exist at a marina or other area where they are secondary in purpose. The parking capacity of undeveloped (and often unregulated) access points can also be estimated, somewhat subjectively but consistently, but is not included among the data presented; note that at some reservoirs there is no use allowed outside of developed areas.

Boat Ramps and Parking. Boat access development is often more comparable than other day use facilities. In almost all cases, ramps are surfaced, parking lots paved, and spaces designated (lot striping). "Floating restrooms" are easy to count. However, there is often unpaved "overflow" parking available for boat trailers, and the usable parking area changes in size as the water surface seasonally rises and falls. Multi-stage launch ramps are another matter--low-stage lanes are generally not included in the total number of launch ramps reported, as most reservoirs were relatively full during spring 2000. Thus, the number of public launching areas and ramp lanes reported herein are reflective of the number of facilities available during "normal" water conditions, but may not completely describe the total scope of lanes and lots constructed at a given reservoir. Conversely, the degree to which access may be diminished during periods of low water is not considered. As with other day use facilities, a subjective but consistent estimate of unpaved parking capacity has been made in addition to designated paved spaces.

Marinas and Moorage. Most marinas are operated by concessionaires, and in some cases they are owned by a private party with a Special Use Permit. Sizes and facilities vary tremendously. They are relatively easy to quantify, but still somewhat difficult to compare because of varying levels of amenities, services, fees, and types of moorage. This report lists the total number of discrete marina-type operations at each reservoir, and the gross capacity of their mooring and berthing facilities combined. Also presented is the total number of parking spaces available for marina visitors and boat

launchers (subjective but consistent estimates of unpaved parking capacity are included in these totals).

Surrounding Population. The tools used to determine population distribution at various distances from a reservoir require selection of a Zip Code as the central point. This works quite well when a town is immediately adjacent to the reservoir (e.g., Chester at Lake Almanor) but is less precise when the nearest discrete town is a modest distance away (e.g., San Miguel, near Lakes Nacimiento and San Antonio). It should also be noted that the most meaningful comparisons of the influence of population distribution upon recreation area attendance are traditionally based upon road-miles, whereas the tools used for this study were developed using air-miles. Nevertheless, the results reported herein appear to be reasonable and directly comparable.

Average Annual Visitation. There are no objective means by which to directly compare available attendance information, much less by which to consistently compare trends or a series of recent years. In some cases recent information is completely lacking--the U.S. Forest Service no longer collects or reports attendance data from Shasta or Trinity Lakes, instead relying on the last available information from 1992. At some reservoirs, campground and fee-related attendance data is available, but this is of little relevance in the context of hundreds-of-thousands of recreation-days that occur at unrestricted access points. California State Parks generally collects the most detailed and thorough attendance data, but these are not directly comparable to the non-State facilities because of differences in methodology or units.

Where available, an "average" number provided by the respective managing agency is reported for gross comparison. However, caution must be taken when making comparisons as there are potentially many reasons for the differences observed, and a great deal of insurmountable uncertainty in the precision of the reported totals.

Surrounding Competing Recreation Opportunities. Lists of other notable outdoor recreation destinations, occurring within a 30-mile (air) radius, were compiled for each reservoir. Each list reflects features illustrated on standard California State Automobile Association "Section" maps. These lists are provided to give the reader some idea of other factors that may influence the local demand for recreation development and opportunities at each reservoir. Scoping documents in the FERC Relicensing process also often describe existing recreation in a regional context. Not surprisingly, an objective comparison of how these "competing" destinations influence attendance and the historic level of development at the respective large reservoirs is exceedingly difficult, and necessarily beyond the scope of this report.

FEDERAL RESERVOIRS

Several federal agencies own and operate reservoirs in California. Recreation development at these reservoirs is generally directed by the Federal Water Project Recreation Act of 1965 (amended 1974, 1976, and 1992). The Act requires federal constructing agencies to partner with other agencies to develop and operate recreation facilities. In several cases the partner is the State (e. g. Folsom Lake, Millerton Lake) and facilities meet the standards of the California State Park System, but in other cases the facilities lie within the National Forest system or a National Recreation Area (e. g. Trinity Lake) and recreation facilities exemplify those typical of National Forest lands. Private concessionaires also often play a prominent role, operating facilities and providing recreation opportunities.

Described in this section are Lake Berryessa, Folsom Lake, Isabella Lake, Millerton Lake, New Melones Reservoir, Pine Flat Lake, Shasta Lake, and Trinity Lake. All are multi-purpose reservoirs that include hydroelectric benefits (but are not FERC-licensed because of their federal affiliation). The levels and types of recreation development and management strategies are notably varied.

Shasta Lake

At a Glance:

Year Built:	1945
Storage (maf):	4.55
Surface Area (ac):	29,500
Average Annual Visitation:	2,500,000
Marinas (Moorage):	11 (2,555)
Campgrounds (# of sites):	27 (750)
Picnic Units (Assoc. Parking):	54 (~500)
Boat Ramp Lanes (Parking):	35 (1,600)

Other Features: OHV Area; Extensive Shoreline Camping; Boat-In and Group Camps; Caves

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Lake Shasta is the largest reservoir in California and the keystone of the federal Central Valley Project. It provides water, power, flood control, and fishery benefits in addition to recreation. Owned and operated by the Bureau of Reclamation, Shasta fills in most years of normal precipitation and then recedes more than 100 feet in elevation as water and power needs are met through the year. The Shasta-Trinity National Forest administers the vast Shasta and Trinity units of the Whiskeytown-Shasta-Trinity National Recreation Area, of which Shasta Lake is the largest component (the Whiskeytown unit and Whiskeytown Lake, not otherwise included in this inventory, are administered by the National Park Service).

Redding, population about 80,000, is the largest city in the vicinity of Shasta Lake. The greater "Redding-Anderson subdivision" of Shasta County has a population of about 150,000. The reservoir is situated at the southern gateway to the Shasta-Trinity National Forest. Trinity Lake (third-largest reservoir in California) and Whiskeytown Reservoir (241,000 ac-ft and of relatively stable elevation) are major competing reservoirs within 50 miles of Shasta.

Shasta Lake with its four large arms (Pit River Arm, McCloud River Arm, Sacramento River Arm, and Squaw Creek Arm) provides vast opportunities for remote access and boat-in camping. The lake has over 370 miles of shoreline and a maximum depth of 571 feet when full. Its fishery includes bass, trout, salmon, catfish, crappie, bluegill, sturgeon, and other species.

In addition to fishing and boating, Lake Shasta offers extensive camping opportunities. The lake has 18 developed (shore-based and boat-in) and several other

non-developed campground areas managed by the Forest Service. There are also eleven marinas located at various sites around the Lake, some which offer private campgrounds, and miles of Forest roads providing access to upland and upstream recreation opportunities.

Keswick Reservoir, a much smaller impoundment (regulating reservoir) on the Sacramento River, is located directly downstream from Shasta Lake. Developed recreation opportunities at Keswick are negligible, and statistics describing Keswick are not included in the summary of Shasta features.

Information about Lake Shasta can be obtained from:

Shasta Lake Information Center
14250 Holiday Rd.
Redding, CA 96003
(530) 275-1589

Shasta Lake Ranger District
14225 Holiday Dr.
Redding, CA 96003
(530) 275-1587

Shasta Lake: Potential Alternative Outdoor Recreation Destinations (30-mile radius)

Rivers

- Sacramento River
- Pit River
- East Fork Trinity River
- Trinity River
- Clear Creek
- Cottonwood Creek
- Cow Creek

Lakes

- Trinity Lake
- Whiskeytown Lake
- Pit Reservoirs #6, #7
- Lewiston Lake
- Keswick Reservoir
- Rainbow Lake
- Grey Rock Lake
- Tamarack Lake
- Twin Lake
- Scorpion Lake
- Lake Eleanor
- Granite Lake

Public Parks/Recreation Areas

- Mouth of Cottonwood Creek Wildlife Area
- Battle Creek National Fish Hatchery
- Battle Creek Wildlife Area
- Ellen Pickett State Forest
- McCloud River Preserve
- Whiskeytown Unit
- Castle Crags SP
- Shasta SHP
- Shasta National Forest
- Trinity Alps Wilderness
- Trinity National Forest
- Trinity River Fish Hatchery

Lake Shasta: Facilities Identified and/or Visited During Inventory

Day Use Facilities/Access
Antlers Boat Ramp
Visitors Center
Turntable Bay Rd.
Obrien Rest Stop
Bailey Cove
Shasta Caverns
Packers Bay
Nelson Point Area
Dekkas Rock
McCloud Bridge
Samwell Cave
Nosoni Creek
Centimundi Area
Fishermans Point
USBR Visitor Center
W. Dam Abutment
Dry Creek Trailhead
Shasta OHV Area
Shasta Day Use Area
Unsigned Overlook
Clikapudi Trail Head
Silverthorn Rd. Turnouts

Campgrounds
Arbuckle Flat Camp
Upper Jones Valley Camp
Lower Jones Valley Camp
Bailey Cove Camp
Greens Creek Boat Camp
Hirz Bay Group Camp
Hirz Bay Camp
Dekkas Group Camp
Moore Creek Camp
Ellery Creek Camp
Pine Point Camp
McCloud Bridge Camp
Ski Island Boat Camp
Jones Valley Inlet/Pit River Arm
Gregory Creek
Gooseneck Cove Boat Camp
Nelson Point
Beehive Point
Shasta Dam
Lakeshore
Mariner's Point

Boat Launches
Jones Valley Launch
Centimudi Launch
Packers Bay Launch
Bailey Cove
Hirz Bay Launch
Antlers
Sugarloaf

Resorts and Marinas
Jones Valley Resort
Silverthorn Marina
Bridge Bay Resort
Digger Bay Marina
Packers Bay Marina
Holiday Harbor Resort
Lakeview Marina Resort
Shasta Marina
Lakeshore Resort and Marina
Tsasdi Resort
Sugarloaf Marina and Resort
Sugarloaf Cottages
Antlers RV Campground/Resort

R.V. Parks and Private Camps
Lakehead Campground and R.V. Park
Shasta Lake R.V. Resort
Lake Shore Inn and R.V.
Lake Shore Villa R.V. Park
Trail Inn / Campground
Antlers R.V. Park and Campground
Kamploops Camp

Trinity Lake

At a Glance:

Year Built:	1962
Storage (maf):	2.59
Surface Area (ac):	17,280
Average Annual Visitation:	250,000
Marinas (Moorage):	5 (782)
Campgrounds (# of sites):	15 (802)
Picnic Units (Assoc. Parking):	36 (77)
Boat Ramp Lanes (Parking):	17 (500)

Other Features: 34 Boat-In Camps; Group Camps; Beaches

Trinity Lake, the third largest reservoir in the State behind Lakes Shasta and Oroville, is one of three major reservoirs in the Whiskeytown-Shasta-Trinity National Recreation Area. Surrounded by the Shasta-Trinity National Forests, it is operated by the Bureau of Reclamation for water, power, flood control, and fishery benefits in addition to recreation. Recent changes in operations, intended to restore dwindling runs of anadromous fish in the Trinity River, have increased the amount of drawdown during summer and fall. Trinity Lake can be expected to fluctuate well over 100 feet in an average year.

Weaverville, population 3,500, is the largest city in the vicinity of Trinity Lake. There are also four other small towns in the surrounding area: Lewiston, Trinity Center, Covington Mill and Coffee Creek. Lake Shasta (largest in California) and Whiskeytown Lake (241,000 acre feet and of relatively stable elevation) are both within 50 miles of Trinity Lake.

The western approach to Trinity Lake has many accommodations, some privately owned and operated, and some managed by the U. S. Forest Service. Facilities include campgrounds, boat ramps, four full-service marinas, and other accommodations typically found at large reservoirs. The eastern side of the lake is much more primitive and undeveloped, offering solitude and relatively restricted automobile access to both the lakeshore and the National Forest. The two major arms of Trinity Lake (Stuart, Main) provide angling opportunities for rainbow trout, kokanee salmon, small and largemouth bass, and catfish.

Located directly downstream from Trinity Lake on the Trinity River is Lewiston Lake. Developed camping and recreation facilities also exist at this site, including a fifth marina, and the statistics provided herein for Trinity Lake include the adjacent, reservoir-related features of Lewiston Lake.

Information about Trinity and Lewiston Lakes can be obtained from:

Weaverville Ranger District
P.O. Box 1190
Weaverville, CA 96093
(530) 623-2121

Supervisor's Office
Shasta-Trinity National Forests
2400 Washington Avenue
Redding, CA 96001
(530) 246-5222

Trinity Lake: Potential Alternative Outdoor Recreation Destinations (30-mile radius)

Lakes

- Shasta Lake
- Spring Creek Reservoir
- Keswick Reservoir
- Tamarack Lake
- Twin Lake
- Grey Rock Lake
- Lewiston Lake
- Rainbow Lake
- Lake Eleanor
- Granite Lake
- Whiskeytown Lake

Rivers

- North Fork Trinity River
- Trinity River
- East Fork Trinity River
- Sacramento River

Public Parks/Recreation Areas

- Shasta SHP
- Ellen Pickett State Forest
- Chanchelulla Wilderness
- Weaverville Joss House SHP
- Trinity Alps Wilderness
- Shasta National Forest
- Six Rivers National Forest
- Klamath National Forest

Trinity Lake: Facilities Identified and/or Visited During Inventory

Day Use Facilities/Access
Tan Bark Picnic Area
Osprey Info. Center
Stoney Swim Area
Trinity Lake Shore Trail
Clark Springs Picnic Area/Beach
Lake Trail @ Alpine View CG
Bowerman Barn
Trinity Center Rd.
T.C. Airport Rd.
North Shore Vista
Eastside Rd.
Buckeye Arm Rd.
Trinity Vista
Trinity Dam Vista
Pine Cove Picnic Area
Cooper Gulch
Lewiston Vista

Boat Launches
Bowerman Boat Ramp
Clark Springs Boat Ramp
Fairview Boat Ramp
Minersville Low-Water Ramp
Stuart Fork Boat Ramp
Trinity Center Boat Ramp
Pine Cove Boat Ramp

Campgrounds
Alpine View
Bushytail Group Camp
Captains Point Boat-In
Clark Springs
Fawn Group Camp
Hayward Flat
Jackass Springs
Mariners Roost Boat-In Camp
Minersville
Ridgeville Island Boat-In
Stoney Creek Group Camp
Stoney Point
Tannery Gulch
Preacher Meadow

Resorts and Marinas
Ripple Creek Cabins
Enright Gulch Motel
Wyntoon
Trinity Center Marina
Airporter Inn
Estrellita Marina
Cedar Stock Resort
Pinewood Cove Resort
Trinity Alps Resort
Trinity Alps Marina
Pine Cove Marina

New Melones Reservoir

At a Glance:

Year Built:	1979
Storage (maf):	2.40
Surface Area (ac):	12,500
Average Annual Visitation:	500,000
Marinas (Moorage):	1 (225)
Campgrounds (# of sites):	5 (302)
Picnic Units (Assoc. Parking):	100 (260)
Boat Ramp Lanes (Parking):	17 (490)

Other Features: 2 Group Camps; Walk-In Fishing Access; Float Plane Access

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New Melones Reservoir is the fourth-largest reservoir in the State and the largest reservoir tributary to the South Delta. One of a series of impoundments geographically aligned along the western foothills of the Sierra Nevada in Central California, New Melones was constructed by the U. S. Army Corps of Engineers for water, power, and flood control as well as recreation. The facilities and recreation are now administered by the U. S. Bureau of Reclamation. New Melones also plays an important role in maintaining water quality standards in the Sacramento-San Joaquin Delta during summer and fall. Jamestown, Sonora, Tuttletown, and Angels Camp with a combined population of roughly 20,000 are the largest towns in the vicinity of New Melones Reservoir.

With more than 100 miles of shoreline and a maximum depth of 565 feet, New Melones is home to several species of game fish which include largemouth bass, rainbow and brown trout, catfish, crappie, and bluegill. Despite its large size, there are only two public recreation areas at New Melones with camping facilities, the Glory Hole Recreation Area and the Tuttletown Recreation Area, with a combined 250 camping sites. There are several developed and undeveloped opportunities for day-use shoreline access.

Located directly downstream from New Melones Dam is Tulloch Reservoir. There are no public recreation facilities at Tulloch Reservoir; instead, Tulloch's shoreline is primarily developed as residential area. Public access is negligible (though there are some private resort facilities), so statistics describing Tulloch Reservoir are not included in the summary of New Melones features.

Information about New Melones Reservoir can be obtained from:

Bureau of Reclamation
Park Manager
6850 Studhorse Flat Road
Sonora, CA 95370
(209) 536-9094

New Melones Reservoir: Potential Alternative Outdoor Recreation Destinations (30-mile radius)

Rivers

- Tuolumne River
- Merced River
- Stanislaus River

Lakes

- Lyons Reservoir
- Don Pedro Reservoir
- Lake McClure
- Turlock Lake
- Modesto Reservoir
- Woodward Reservoir
- Tulloch Reservoir
- Salt Springs Valley Reservoir
- Red Hawk Lake
- New Hogan Reservoir
- Pardee Reservoir
- Camanche Reservoir

Public Parks/Recreation Areas

- Stanislaus National Forest
- Fleming Meadows Recreation Area
- Turlock Lake SRA
- Modesto Reservoir Regional Park
- Woodward Reservoir Regional Park
- Calaveras Big Trees SP
- Columbia SHP
- New Hogan Lake Recreation Area

Other Recreation Areas

- Cave City Caverns
- Moaning Cave

New Melones Reservoir: Facilities Identified and/or Visited During Inventory

Day Use Facilities/Access
Camp Nine Res/River Access
Natural Bridges Trailhead
Carson Creek Trailhead
Angels Creek Beach
Buckbrush Fishing Area
Black Bart Picnic Area
Osprey Point Picnic Area
Norwegian Gulch
Peoria Wildlife Area
Lupine Picnic Area
Heron Point Picnic Area

Campgrounds
Ironhorse
Big Oak
Manzanita
Chamise
Acorn

Public Boat Ramps
Glory Hole Point Ramp
Angels Creek Ramp
Tuttletown Ramp
Mark Twain Ramp

Resorts and Marinas
New Melones Lake Marina

Lake Berryessa

At a Glance:

Year Built:	1957
Storage (maf):	1.6
Surface Area (ac):	20,700
Average Annual Visitation:	1,000,000
Marinas (Moorage):	7 (1,500)
Campgrounds (# of sites):	6 (635, private)
Picnic Units (Assoc. Parking):	152 (510)
Boat Ramp Lanes (Parking):	39 (~550)

Other Features: Group Picnicking; Free Day Use; Abundant Undeveloped Parking

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Lake Berryessa is the largest reservoir in the eastern foothills of the Coast Range. Its primary purpose is irrigation water supply, but it also produces hydroelectric power. Near the small town of Winters, it is a well known fishing destination. Lake Berryessa receives most of its visitors from major metropolitan areas: Sacramento is less than 50 miles away, San Francisco a little farther than that.

The north end of the lake is fairly shallow with a grassy shoreline formed on gentle sloping banks. In contrast, steep and rocky oak woodland and chaparral-covered slopes are typical of the south end. There are numerous public access points for free day-use, one free boat ramp, and seven recreation areas operated by concessionaires under contract with the Bureau (six of the latter offer short-term camping, all are available for paid day use and boat launching). All local campgrounds are associated with these commercial resorts: Lake Berryessa is the only reservoir discussed in this inventory with no traditional public campgrounds. Most of these resorts and marinas also provide higher-standard accommodations and other services for visitors and anglers. It should also be noted that activities on the extensive east side of the lake are more restricted; it is a 2,000 acre wildlife area jointly managed by the Bureau and the California Department of Fish and Game.

A public recreation facility, operated by Solano County, exists six miles downstream from Lake Berryessa at Lake Solano and includes camping and day use. However, Lake Solano and its facilities are not included in the statistics describing Lake Berryessa facilities. There are also paid-day-use fishing access points along Putah Creek, between the aforementioned lakes, which are not considered part of the

reservoir recreation environment. Clear Lake is within 50 miles of Lake Berryessa, and can be considered a major competing recreation destination, but Clear Lake is farther from the population centers mentioned above.

Information about Lake Berryessa can be obtained from:

U. S. Bureau of Reclamation
Lake Berryessa Field Office
5520 Knoxville Road
Napa, CA 94558
(707) 966-2111

Lake Berryessa: Potential Alternative Outdoor Recreation Destinations (30-mile radius)

Lakes/Shoreline

- Lake Solano
- Lake Hennessey
- Grizzly Bay

Rivers

- Napa River
- Sonoma Creek
- Cache Creek
- Putah Creek

Public Parks/Recreation Areas

- Grizzly Island Wildlife Area
- Napa Sonoma Marsh Wildlife Area
- Annadel SP
- Jack London SHP
- Bale Grist Mill SHP
- Sugarloaf Ridge SP
- Las Posadas State Forest
- Robert Louis Stevenson SP
- Sonoma SHP
- Woodland Opera House SHP
- Jepson Prairie Preserve
- Hill Slough Wildlife Area
- Skyline Park
- Lake Solano County Park

Other Recreation Areas

- Marine World Theme Park
- Western Railroad Museum

Lake Berryessa: Facilities Identified and/or Visited During Inventory

Day Use Facilities/Access
Parking Below Dam
Spanish Flat
Visitor Center
"Oak Shores Complex"
  Coyote Knoll
  Coyote Beach
  Patwin Grove
  Twin Oak Ridge
  Mckenzie Ridge
  Shale Point
  Foxtail Flat
  Acorn Beach
Smittle Creek
Pope Canyon
Putah Creek
Gibson Flat
Barton Hilll
Raccoon Lagoon
Eticuera
East Side Road

Campgrounds
Lake Berryessa Marina
Putah Creek Resort
Pleasure Cove Resort
Rancho Monticello Resort
Spanish Flat Resort
Steele Park Resort

R.V. Parks & Private Camps
Lake Berryessa Marina Resort
Putah Creek Park
Pleasure Cove Resort
Rancho Monticello Resort
Spanish Flat Resort.
Steele Park Resort

Public Boat Ramps
Capell Cove
Lake Berryessa Resort
Rancho Monticelllo Resort
Spanish Flat Resort
Putah Creek Resort
Markley Cove Resort
Steele Park Resort
Pleasure Cove Resort
Coyote Knoll
Foxtail Flat

Folsom Lake

At a Glance:

Year Built:	1956
Storage (maf):	1.01
Surface Area (ac):	11,400
Average Annual Visitation:	2,500,000
Marinas (Moorage):	1 (685)
Campgrounds (# of sites):	2 (150)
Picnic Units (Assoc. Parking):	230 (~1,600)
Boat Ramp Lanes (Parking):	48 (1,935)

Other Features: Extensive Trails, Beaches; Hike-In Camps; Boating Information Safety Center

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Folsom Lake is the main attraction of Folsom State Recreation Area, managed by the California Department of Parks and Recreation under agreement with the Bureau of Reclamation. The reservoir is a feature of the Central Valley Project. It is the closest 1,000,000 ac-ft reservoir to Sacramento, and most of its recreational visitors come from that city and county. Folsom fills in most normal winters and recedes throughout the summer and fall as water and power needs are met.

Folsom Lake features 75 miles of shoreline when full. It extends about 15 miles up the North Fork and more than 10 miles up the South Fork American River. Lake levels vary in normal years from an elevation of 466 feet at the beginning of the summer to a low of 405 feet in early winter. The need for flood protection in the Sacramento requires flood storage to be maintained through the winter; this occasionally impacts recreation when runoff is less than anticipated and insufficient to fill the lake in Spring.

Recreation facilities include two major public campgrounds and other opportunities for overnight mooring and hike-in camping, picnic areas and beaches, 50 miles of equestrian/pedestrian trails, 25 miles of multi-use trails, 10 miles of bicycle/pedestrian trail, and 16 miles of paved bike path. The latter connects with the 32-mile long American River Parkway, a paved bicycle path linking the Lake to Sacramento. Several multi-stage launch ramps provide continuous boat launching access throughout the lake fluctuation zone. However, the water level of the lake greatly influences the type and amount of recreation that is possible at Folsom Lake; at 420 feet many of the boat ramps go out of service. The Folsom Lake Marina cannot moor most boats when elevation is below 412 feet.

Folsom Lake is home to several species of game fish. Fishing is good for both cold- and warm-water species including rainbow trout, brown trout, black bass, catfish, crappie, bluegill, perch, and kokanee. Bottom-anglers have even been known to catch sturgeon.

Located directly downstream from Folsom Lake is Lake Natoma, also part of Folsom Lake SRA. Group camping and day use recreation facilities also exist at this site, including a modern instructional and recreational Aquatic Center operated in cooperation with California State University, Sacramento. Boating opportunities are limited to low-speed activities (kayaking/canoeing, rowing, sailing, and fishing). The statistics provided herein for Folsom Lake include the adjacent, reservoir-related features of Lake Natoma. The historic Folsom Powerhouse State Historic Park is also within Folsom SRA, adjacent to Lake Natoma.

Information about Folsom Lake can be obtained from:

Department of Parks and Recreation
Folsom Lake State Recreation Area
7806 Folsom-Auburn Rd.
Folsom, CA 95630
(916) 988-0205

American River Water Education Center
7794 Folsom Dam Road
Folsom, CA 95630
(916) 989-7275

Granite Bay Chamber of Commerce
8605 Auburn-Folsom Road
Granite Bay, CA 95746
(916) 791-7187

Folsom Lake: Potential Alternative Outdoor Recreation Destinations (30-mile radius)

Lakes

- Rancho Seco Lake
- Camp Far West Bear Reservoir
- Lake of the Pines
- Lake Clementine
- Slab Creek Reservoir
- Lake Natoma
- Chiquita Lake

Rivers

- Cosumnes River
- Bear River
- American River

Public Parks/Recreation Areas

- Rancho Seco Lake
- Prairie City State Vehicular Recreation Area
- Stone Lakes National Wildlife Refuge
- Feather River Wildlife Area
- Sutter's Fort SHP
- Auburn SRA
- Spenceville Wildlife Area & Recreation Area
- Old Sacramento SHP
- Marshall Gold Discovery SHP
- Discovery Park
- Eldorado National Forest
- American River Parkway

Folsom Lake: Facilities Identified and/or Visited During Inventory

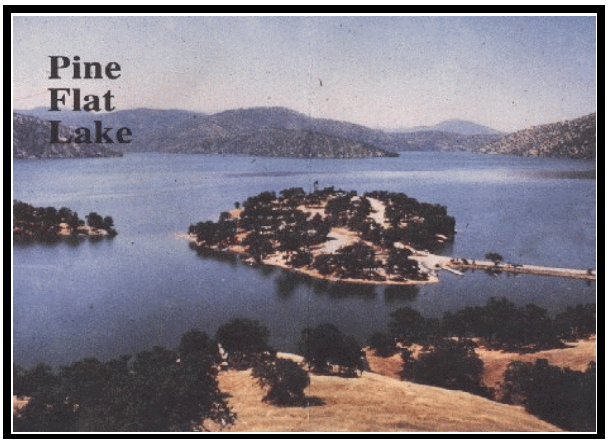
Day Use Facilities/Access
Browns Ravine
Folsom Point/Trailhead
Observation Point
Beals Point
DPR/USBR American R. Water Educ. Ctr.
Sweetwater Creek Trailhead
Salmon Falls Raft Take-Out
Old Salmon Falls
Skunk Hollow
Derrington Trailhead Parking
Peninsula
Granite Bay
Los Lagos Trailhead
Sterling Pointe (Placer County) Facilities
Auburn SRA
Rattlesnake Bar
Folsom Powerhouse SHP

Campgrounds
Penninsula Campground
Beals Point Campground
Negro Bar Group Camp
Environmental Campsites

Resorts & Marinas
Folsom Lake Marina

Public Boat Ramps
Granite Bay
Folsom Point
Browns Ravine
Penninsula Campground
Rattlesnake Bar
Nimbus Flat
Negro Bar
Willow Creek
Beals Point

Pine Flat Lake



At a Glance:

Year Built:	1954
Storage (maf):	1.00
Surface Area (ac):	5,970
Average Annual Visitation:	700,000
Marinas (Moorage):	2 (686)
Campgrounds (# of sites):	10 (~400)
Picnic Units (Assoc. Parking):	114 (~300)
Boat Ramp Lanes (Parking):	8 (~450)

Other Features: Group Camps; Overnight Mooring in some Coves

Pine Flat Lake, in the oak-covered foothills of the Sierra Nevada, is the southernmost 1,000,000 ac-ft reservoir in California. Gateway to the Sierra National Forest, it is about 35 miles from Fresno in an area with about a half-million residents. The lake is operated by the U.S. Army Corps of Engineers and provides recreational opportunities for hundreds of thousands of visitors annually.

Pine Flat Dam impounds the waters of the Kings River and was completed in 1954. It provides flood control protection and irrigation water to the San Joaquin Valley. A hydroelectric powerplant was added in 1984. The lake fluctuates 100 to 200 feet annually.

There are a total of six public campgrounds at Pine Flat and several day use and picnic areas. There are four boat launching ramps with courtesy docks. Five overnight mooring areas are located around the lake for boaters wishing to spend the night aboard their vessel. Two marinas and numerous stores near the lake also provide services to visitors.

The lake offers a variety of gamefish, including black bass, rainbow and brown trout, catfish, crappie, and bluegill. Anglers can also fish for trout on the upper or lower Kings River, and the Kings River above Kirch Flat is an excellent whitewater rafting area in the spring and early summer.

Information about Pine Flat Lake can be obtained from:

U. S. Army Corps of Engineers
Pine Flat Lake
P.O. Box 117
Piedra, CA 93649-0117
(209) 787-2589

U.S. Forest Service
Sierra National Forest Trimmer Ranger Station
(209) 855-8321

Fresno County Parks Department
(209) 488-3004

Pine Flat Lake: Potential Alternative Outdoor Recreation Destinations (30-mile radius)

Rivers

- North Fork Kings River
- South Fork Kings River
- San Joaquin River
- Kings River

Lakes

- Avocado Lake
- Sequoia Lake
- Hume Lake
- Shaver Lake
- Courtright Reservoir
- Wishon Reservoir
- Redinger Lake
- Kerckhoff Reservoir
- Millerton Lake
- Redbank Reservoir
- Huntington Lake
- Lost Lake

Public Parks/Recreation Areas

- Sequoia National Forest
- Jennie Lake Wilderness
- Kings Canyon National Park
- McKinley Grove Giant Sequoias
- Monarch Wilderness
- Millerton Lake SRA
- Tamarack Winter Sports Area

Pine Flat Lake: Facilities Identified and/or Visited During Inventory

Day Use Facilities/Access
Observation Point
Pine Flat Power Plant Fishing Access
Kirkman's Point Overlook
Island Park
Blue Oak Nature Trail
Trimmer Springs Road Side
Sycamore Creek 4WD Trail
Kirch Flat

Campgrounds
Island Park
Sycamore
Deer Creek Group Camp
Kirch Flat
Choinumni
Pine Flat

Boat Launches
Deer Creek Launch
Island Park Camp
Lakeview Rec. Area
Trimmer Rec. Area

Resorts and Marinas
Deer Creek Marina
Trimmer Marina
Lakeridge Resort

R.V. Parks and Private Camps
Lakeridge Park
Sunnyslope Campground
Trimmer Marina and Campground
Oak Knolls Trailer Park
Driftwood Trailer Park
Lakeview RV and Trailer Park

Isabella Lake

At a Glance:

Year Built:	1953
Storage (maf):	0.57
Surface Area (ac):	11,400
Average Annual Visitation:	1,500,000
Marinas (Moorage):	3 (~80)
Campgrounds (# of sites):	8 (872)
Picnic Units (Assoc. Parking):	8 (75)
Boat Ramp Lanes (Parking):	14 (~300)

Other Features: Group Camps; Virtually Unlimited Shoreline Parking; Open Shoreline Camping

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Isabella Lake is about 50 miles east of Bakersfield (an area of over 300,000 residents). On the Kern River, Lake Isabella is near the southern end of the Sequoia National Forest. It is the closest major reservoir to Bakersfield, but Pyramid Lake and Castaic Lake (two smaller, SWP facilities) are just slightly more distant. However, many Isabella visitors come from the Los Angeles area.

Isabella Lake was created in 1953 for the purposes of water supply, flood control, and recreation. Hydroelectric capacity was added later. Isabella is one of the largest reservoirs in Southern California, but for several reasons (including lower-than-average runoff and also Endangered Species Act issues) has not filled completely in recent years. It is surrounded by six small towns and several private ranches, but there are numerous public access points.

Surrounding the lake are eight developed campgrounds with almost 900 family campsites and several group areas. Additionally, about half the lakeshore is open to drive-up undeveloped access, allowing almost unlimited opportunities for shoreline access and self-contained vehicles to camp (no fee) or car-top boats to launch. There is also no fee for day use, but boaters are required to purchase a permit for lake use. Year-around fishing for various species is also a main attraction, as is river rafting access. A fish hatchery, wildlife area, and OHV trails are also local attractions associated with the reservoir, river, and surrounding lands.

Information about Isabella Lake can be obtained from:

Sequoia National Forest, Greenhorn Ranger District
Lake Isabella Visitor Center
4875 Ponderosa Drive
Lake Isabella, CA 93240
(760) 379-5646

Kern County Parks and Recreation Department
1110 Golden State Avenue
Bakersfield, CA 93301
(661) 868-7000

Isabella Lake: Potential Alternative Outdoor Recreation Destinations (30-mile radius)

Lakes

- Ming Lake

Rivers

- Kern River
- White River

Public Parks/Recreation Areas

- Domeland Wilderness
- Sequoia National Forest

Other Recreation Areas

- Shirley Meadows Ski Area
- Miracle Hot Springs
- California Hot Springs
- Salmon Falls

Isabella Lake: Facilities Identified and/or Visited During Inventory

Day Use Facilities/Access
French Gulch
Boulder Gulch
West Side & Rich Gulch Rds.
Coso Mine Loop Trail
Tillie Creek
Wofford Heights Park
Audubon Kern River Preserve
S. FK. Wildlife Area
Hanning Flat
Model Aircraft Club Flying Field
Robinson Cove
Stine Cove
Camp 9
Kernville Vicinity
Kissack Bay
Visitor Center
"Engineer Point"
Keyesvillle Rec. Area
Keyesville South River Rafting Access
"Main Dam" Viewpoint

Resorts & Marinas
Kern Valley Marina
French Gulch Marina
North Fork Marina

Campgrounds
Auxiliary Dam Recreation Area
Main Dam Campground
Pioneer Point Campground
French Gulch Group Area
Hungry Gulch Campground
Boulder Gulch Campground
Tillie Creek Campground & Group Areas
Live Oak North Campground
Live Oak Group Area
Paradise Cove campground
Camp 9 Campground & Group Areas
Stine Cove Recreation Area
Keyesville Recreation Area
Old Isabella Road Recreation Area
South Fork Recreation Area

Public Boat Ramps
Camp 9
Kissack Bay
South Fork Recreation Area
Old Isabella Road
Auxiliary Dam
Tillie Creek
Stine Cove

Millerton Lake

At a Glance:

Year Built:	1944
Storage (maf):	0.52
Surface Area (ac):	4,900
Average Annual Visitation:	600,000
Marinas (Moorage):	1 (~500)
Campgrounds (# of sites):	2 (173)
Picnic Units (Assoc. Parking):	150 (270+)
Boat Ramp Lanes (Parking):	26 (600+)

Other Features: 40 Boat-In Camps; Group Camps; Group Picnic Areas; Equestrian Trails

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Millerton Lake is the primary attraction of Millerton Lake State Recreation Area. Like Pine Flat Lake, it is relatively close to Fresno (20 miles northeast); Millerton is a little further from the Sierra National Forest, but closer to other small popular reservoirs such as Shaver Lake and Bass Lake. It was built on the San Joaquin River, at the point where the river flows out of its Sierra Nevada foothill canyon and into the Central Valley, in 1944.

A mile wide near the dam, Millerton Lake is three miles wide at its widest point and stretches more than 16 miles back up into the river canyon. Most recreation development is on the gently-sloping western and southwestern shores, closest to population centers. There are several expanses of shoreline where it is permissible to drive to the water's edge for day use. Some residential development has occurred on an expanse of the southern shore; about a mile or two of this shoreline is lined with relatively large homes. The hills that surround the lake tend to be steeper and higher toward the eastern end of the reservoir, and these areas are relatively remote and undeveloped.

There is one main developed campground with a total of 148 family campsites. There are two group camps that can accommodate 40 and 75 people respectively, and one equestrian campsite. Boaters can also use the 25 campsites at Temperance Flat, an upstream boat-in campground, and fifteen boats with fully self-contained facilities can anchor and stay overnight in the North Finegold area.

It should be noted that there are also expansive day use facilities at Lost Lake Park, just a few miles downstream from Friant Dam. Operated by the Fresno County

Parks Department, the water and recreation operations of Lost Lake and its facilities are not related to those at Millerton Lake. Thus, the Lost Lake information is not included in the summary or statistics describing Millerton facilities.

Information about Millerton Lake can be obtained from:

Millerton Lake State Recreation Area
5290 Millerton Road
P. O. Box 205
Friant, CA 93626
(559) 822-2332

Millerton Lake: Potential Alternative Outdoor Recreation Destinations (30-mile radius)

Lakes

- Kerckhoff Reservoir
- Pine Flat Lake
- Shaver Lake
- Bass Lake
- Hensley Lake
- Eastman Lake
- Berenda Lake
- Avocado Lake
- Redinger Lake
- Lost Lake

Rivers

- Chowchilla River
- Fresno River
- Kings River
- Joaquin River

Public Parks/Recreation Areas

- Hensley Lake Recreation Area
- Eastman Lake Recreation Area
- Wassama Round House SHP
- Sierra National Forest

Millerton Lake: Facilities Identified and/or Visited During Inventory

Day Use Facilities/Access
Buzzards Roost Trail
Friant Dam Overlook
South Finegold Day Use Facil.
Blue Oak Picnic Area
Grange Grove Picnic Area
South Bay Picnic Area
La Playa Picnic Area
Dumna Cove
Millerton Courthouse
San Joaquin River Trail
North Shore Trail
Blue Oak Trail

Campgrounds
North Shore Campground
Temperance Flat Boat Camp
North Finegold Boat Camp

Resorts & Marinas
Millerton Marina

Public Boat Ramps
Millerton Boat Ramp #1
Millerton Boat Ramp #2
Millerton Boat Ramp #3
Millerton Boat Ramp #4
Millerton Boat Ramp #5
Millerton Boat Ramp #6

NON-FEDERAL FERC-LICENSED RESERVOIRS

Many diverse non-federal agencies own and operate water and power supply facilities in California. The largest reservoir of this type is Lake Oroville (State of California, Department of Water Resources). Others are generally owned by utility companies or irrigation districts, and three other such facilities are described in this report because of their size: Don Pedro Reservoir, Lake Almanor, and Lake McClure.

Recreation development at these reservoirs is subject to FERC License requirements. Also, the State Davis-Dolwig Act applies to Lake Oroville. However, as with federal agencies, the operators of the water facilities often partner with other agencies to develop and operate recreation facilities. In this respect, these five cases have little in common: Lake Oroville is operated by State Parks, Almanor has some National Forest facilities, and the others have a variety of local/County and private concessionaire operations.

Lake Oroville

At a Glance:

Year Built:	1967
Storage (maf):	3.62
Surface Area (ac):	21,000
Average Annual Visitation:	700,000
Marinas (Moorage):	2 (1,160)
Campgrounds (# of sites):	7 (312)
Picnic Units (Assoc. Parking):	300 (805)
Boat Ramp Lanes (Parking):	61 (2,200)

Other Features: 41mi Bike Trail; Hatchery; Many Sites Free; Floating + Equestrian Camps.

Lake Oroville is the second-largest reservoir in California and the keystone of the California State Water Project. It provides water, power, flood control, fishery, and recreation benefits. Owned and operated by the State of California, Department of Water Resources, Lake Oroville fills in most years of normal precipitation and then recedes more than 100 feet in elevation as water and power needs are met through the year.

The Lake Oroville Complex lies in Butte County and includes Lake Oroville, Thermalito Diversion Pool, Thermalito Forebay, Thermalito Afterbay, and the Oroville Wildlife Area. The Thermalito facilities experience little surface fluctuation. Population centers nearest Lake Oroville include the City of Oroville (population about 12,000) and Chico (about 40,000).

Recreation facilities at Lake Oroville State Recreation Area provide for camping, picnicking, boating, fishing, hunting, horseback riding, hiking, bicycling, and a variety of other activities. The State Recreation Area includes major facilities at Loafer Creek, Bidwell Canyon, Spillway, Lime Saddle, Kelly Ridge Visitor Center, and North and South Thermalito Forebay. In addition, there are several less-developed car-top launching areas, 84 boat-in campsites, and unique floating campsites (10) on Lake Oroville. Thermalito Afterbay, in the heart of the Oroville Wildlife Area, also has recreation facilities.

Information about the Lake Oroville State Recreation Area, and other recreation areas associated with the Oroville Complex, can be obtained from:

Lake Oroville State Recreation Area
400 Glen Drive
Oroville, CA 95966
(530) 538-2200

Lake Oroville Visitor Center
(530) 538-2219

California Department of Water Resources
Oroville Field Division
460 Glen Drive
Oroville, CA 95966
(530) 534-2203

Lake Oroville: Potential Alternative Outdoor Recreation Destinations (30-mile radius)

Rivers

- Middle Fork Feather River
- South Fork Feather River
- North Fork Feather River
- Yuba River

Lakes

- Sly Creek Reservoir
- Lost Creek Reservoir
- Collins Lake
- New Bullards Bar Reservoir
- Lake Wildwood
- Englebright Reservoir
- Concow Reservoir
- Paradise Lake
- Thompson Lake
- Ponderosa Reservoir
- Forbestown Reservoir
- (Thermalito Forebay)
- (Thermalito Afterbay)

Public Parks/Recreation Areas

- Plumas National Forest
- Upper Butte Basin Wildlife Area
- Gray Lodge Waterfowl Management Area
- Bidwell Mansion SHP
- Bidwell Sacramento River SP
- Sacramento River Wildlife Area
- (Oroville Wildlife Area)

Lake Oroville: Facilities Identified and/or Visited During Inventory

Day Use Facilities/Access	**Campgrounds**
Loafer Creek	Bidwell Canyon
Lime Saddle	Loafer Creek
Bidwell	Loafer Creek Group Camp
Diversion Pool	North Point Boat-in Camp
Parrish Cove	Knoll Boat-in Camp
Monument Hill	South Cove Boat-in Camp
Larkin Road	South Bloomer Boat-in Camp
Craig Saddle	Craig Saddle Boat-in Camp
Kelly Ridge Visitor Center	Foreman Point Boat-in Camp
Saddle Dam	Goat Ranch Boat-in Camp
Lime Saddle Road Loop Trail	Floating Campsites
Oroville Wildlife Area	Spillway Launch Area (O'flow)
North Forebay	North Forebay Enroute Camps
South Forebay	Loafer Equestrian Camp
	Oroville Wildlife Area

Public Boat Ramps	**Resorts and Marinas**
Spillway Launch Area	Bidwell Canyon Marina
Lime Saddle Ramp	Lime Saddle Marina
Bidwell Canyon Ramp	
Loafer Creek Ramp	
Nelson Bar	
Vinton Gulch	
Dark Canyon	
Foreman Creek	
Stringtown Road	
Enterprise Ramp	
Wilbur Road	
Monument Hill	
North Forebay	
South Forebay	

Don Pedro Reservoir

At a Glance:

Year Built:	1971
Storage (maf):	2.03
Surface Area (ac):	12,960
Average Annual Visitation:	450,000
Marinas (Moorage):	2 (251)
Campgrounds (# of sites):	3 (550)
Picnic Units (Assoc. Parking):	25 (75)
Boat Ramp Lanes (Parking):	13 (~600)

Other Features: Group Picnic Areas; Boat-In Camping; Swim Lagoon

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Don Pedro Reservoir is the fifth-largest reservoir in California. It is nestled in the Sierra Nevada foothills east of Modesto (population about 175,000) and 39 miles from Stockton (population about 250,000). Except for off-stream San Luis Reservoir, it is the southernmost impoundment storing over 2,000,000 ac-ft. Built in a deep canyon on the Tuolumne River, Don Pedro Reservoir provides water, power, and flood control benefits for the Turlock Irrigation District. The recreation facilities are maintained and operated by the Don Pedro Recreation Agency, an entity of the reservoir owners.

Offering 160 miles of shoreline with nearly 13,000 surface acres, typical activities include boating, fishing (bass, trout, salmon, crappie, bluegill, and catfish), swimming, waterskiing, jetskiing, sailing and houseboating. Shoreline facilities include three recreation areas: Fleming Meadows and Blue Oaks at the West Shore, and Moccasin Point on the East Shore. All three recreation areas have launch ramps, picnic facilities, and a total of 550 campsites. Boat-in camping (developed and undeveloped) is allowed over most of Don Pedro's 160 miles of shoreline, but there is little other opportunity for shoreline (roadside) access.

Information about Don Pedro Reservoir can be obtained from:

Don Pedro Recreation Agency
31 Bonds Flat Rd.
La Grange, CA 95329
(209) 852-2396

Turlock Irrigation District
333 East Canal Drive
Turlock, CA 95381
(209) 883-8300

Don Pedro Reservoir: Potential Alternative Outdoor Recreation Destinations (30-mile radius)

Lakes

- Turlock Lake
- Woodward Reservoir
- Modesto Reservoir
- New Melones Lake
- Lake McClure
- Lake McSwain
- Pine Mountain Lake
- Lyons Reservoir
- Salt Spring Valley Reservoir
- Tulloch Reservoir
- Pinecrest Reservoir
- Cherry Lake

Rivers

- Tuolumne River
- North Fork Merced River
- Middle Fork Stanislaus River
- South Fork Stanislaus River

Public Parks/Recreation Areas

- USACE Stanislaus River Parks
- Railtown SHP
- Columbia SHP
- Stanislaus National Forest

Other Recreation

- Moaning Cavern
- Cave City Caverns

Don Pedro Reservoir: Facilities Identified and/or Visited During Inventory

Day Use Facilities/Access
Road Beyond Moccasin "D+E"
SR 132 Turnouts/Fishing Access
SR 49 Overlook/Vista
Jacksonville Rd. Spur Access
Saddle Dam
Fleming Swim Lagoon/Picnic
Moccasin Point Picnic Area

Campgrounds
Fleming Meadows Recreation Area
Mocassin Point Recreation Area
Bue Oaks Recreation Area

Public Boat Ramps
Fleming Meadows Recreation Area
Moccasin Point Recreation Area
Blue Oaks Recreation Area

Lake Almanor

At a Glance:

Year Built:	1914
Storage (maf):	1.3
Surface Area (ac):	28,500
Average Annual Visitation:	150,000
Marinas (Moorage):	22 (669)
Campgrounds (# of sites):	13 (~600)
Picnic Units (Assoc. Parking):	55 (135)
Boat Ramp Lanes (Parking):	13 (~300)

Other Features: Archery Range; Paved Bicycle Trail

Lake Almanor is second in surface area to only Lake Shasta among California's reservoirs. It is also the highest in elevation among the reservoirs in this report, so the relatively shallow waters remain relatively cool through summer and support a varied fishery. Owned and operated by Pacific Gas and Electric Company, primarily for power benefits, Almanor is the keystone of PG&E's North Fork Feather River facilities.

Chester (population 3,000) is the largest town close to Lake Almanor, though development has occurred around much of the lake and several small rural towns and subdivisions sprawl over a wide area. Susanville (population 10,000) is about 25 miles away.

Many of the recreation opportunities at Lake Almanor are provided by the numerous resorts and commercial businesses there--they provide most services for anglers, boaters, and other visitors. There are 22 separate--most relatively small--resorts with permitted (by PG&E) docking and berthing facilities catering to the public. Of these, five are full-service marinas with modest rental fleets, but all rent moorage to private vessels for periods of up to six months. The U. S. Forest Service and PG&E provide a few additional public facilities. Much of the lakeshore is private property, though there are also stretches of National Forest land for walk-along or boat-in access.

Lake Almanor has a productive cold- and warmwater fishery. Skiffs of ice occasionally form on the lake in winter, but Almanor is usually ice free, though some extreme winters cold-spells have caused the lake surface to totally freeze over. In any case, moorage is allowed on the Lake only six months of the year, as marinas pull out their docks during winter.

Information about Lake Almanor can be obtained from:

Lassen National Forest
Almanor Ranger District
P.O. Box 767
Chester, CA 96020
(530) 258-2141

Chester/Lake Almanor Chamber of Commerce
P.O. Box 1198
Chester, CA 96020
(530) 258-2426

P. G. & E. Building and Land Services
2730 Gateway Oaks Drive
Sacramento, CA 95833
(916) 386-5164

Lake Almanor: Potential Alternative Outdoor Recreation Destinations (30-mile radius)

Lakes

- Antelope Lake
- Round Valley Reservoir
- Feather Lake
- Caribou Lake
- Butt Valley Reservoir
- Philbrook Reservoir
- Mountain Meadows Reservoir
- Bucks Lake
- Lower Bucks Lake
- Juniper Lake
- Smith Lake
- Snake Lake
- Silver Lake

Rivers/Creeks

- North Fork Feather River
- Middle Fork Feather River
- Deer Creek
- Mill Creek

Public Parks/Recreation Areas

- Caribou Wilderness
- Lassen Volcanic National Park
- Bucks Lake Wilderness
- Plumas National Forest
- Lassen National Forest
- Coon Hollow Wildlife Area
- Warner Valley Wildlife Area

Other Recreation Areas

- Stover Mountain Ski Tow

Lake Almanor: Facilities Identified and/or Visited During Inventory

Day Use Facilities/Access
Almanor Trail
West Side Dirt Roads
West Almanor Picnic Grounds
West Shore Beach
Almanor Drive West
Dyer View
West Shore Boat ramp
Canyon Dam
Lake Almanor Scenic Overlook
East Shore Picnic Area
Chester/Lake Almanor Snowmobile Park
Vista Point/Road Side Rest

Public Boat Ramps
Canyon Dam Picnic Area (Forest Service)
West Shore (Forest Service)

Campgrounds
Almanor Campground (USFS)
Lake Almanor Campground (PG&E)
Almanor Group Campground
PSEA Organizational Campground
Camp Conery Oranizational Group Camp
Last Chance Creek Campground

R.V. Parks & Private Camps
Northshore Campground
Lake Almanor Resort
Big Cove Resort
Kokanee Lodge
Lake Haven Resort
Lassen View Resort
Leisure Trailer Park
Plumas Pines Resort
Lake Cove Resort & Marina
Whispering Pines Trailer Park
Dorado Inn
Vagabond Resort
Big Springs R.V. Park
Almanor Lakeside Resort
The Villager Resort
High Sierra Campground
Knotty Pine Resort

Lake McClure

At a Glance:

Year Built:	1967
Storage (maf):	1.04
Surface Area (ac):	7,400
Average Annual Visitation:	600,000
Marinas (Moorage):	3 (336)
Campgrounds (# of sites):	5 (614)
Picnic Units (Assoc. Parking):	165 (430)
Boat Ramp Lanes (Parking):	13 (375)

Other Features: Archery Range; Group Picnic + Play Areas; Swim Lagoon; Hang-Glider Access

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Lake McClure is the closest reservoir to Merced (population 60,000), and just a little longer trip for Modesto residents than is Don Pedro Reservoir. Also in the Sierra Nevada foothills, Lake McClure is the only major reservoir in the Merced River watershed (its much-smaller regulatory reservoir, adjoining it just downstream, is Lake McSwain). McClure's four developed recreation areas and another at McSwain offer a combination of exceptional year-round recreational opportunities and facilities.

Lake McClure is reportedly well-protected from the prevailing westerly winds by the surrounding tree-covered foothills, and thus is popular with water-skiers. The developed boat ramps and campgrounds are modern and appear especially well-planned. Since most undeveloped reservoir shoreline points are relatively far from roads (there is little opportunity for unpaid access), McClure's irregular but steep shoreline supports little unregulated recreation activity.

Access points and facilities are strictly regulated, maintained, and operated by the Merced Irrigation District Parks Department. There are 614 campsites divided among the five major recreation areas, equipped with modern bathrooms, showers, laundry facilities, and supply vendors. Day use facilities include sandy beaches and swim lagoons, most in grassy park-like settings that include group facilities and play equipment.

Information about Lakes McClure and McSwain can be obtained from:

Merced Irrigation District Parks Department
9090 Lake McClure Road
Snelling, CA 95369
(209) 378-2521

Lake McClure: Potential Alternative Outdoor Recreation Destinations (30-mile radius)

Lakes

- Turlock Lake
- Owens Reservoir
- Modesto Reservoir
- New Melones Lake
- Lake Don Pedro
- Burns Reservoir
- Pine Mountain Lake
- Mariposa Reservoir
- Salt Spring Valley Reservoir
- Tulloch Reservoir
- Priest Reservoir
- Bear Reservoir
- Yosemite Lake
- (Lake McSwain)

Rivers

- Tuolumne River
- Merced River
- South Fork Stanislaus River

Public Parks/Recreation Areas

- USACE Stanislaus River Parks
- Railtown SHP
- Yosemite National Park
- Sierra National Forest
- Stanislaus National Forest

Lake McClure: Facilities Identified and/or Visited During Inventory

Day Use Facilities/Access
Vista Point Hwy. 132
Vista Point Hwy. 49
Dam Overlook
Exchequer Road
Hunters Road

Campgrounds
McClure Point Recreation Area
Barrett Cove Recreation Area
Horseshoe Bend Recreation Area
Bagby Recreation Area

R.V. Parks & Private Camps
McClure Point Recreation Area
Barrett Cove Recreation Area
Horseshoe Bend Recreation Area
Bagby Recreation Area

Public Boat Ramps
McClure Point Recreation Area
Barrett Cove Marina
Horseshoe Bend Recreation Area
Bagby Recreation Area

Resorts & Marinas
McClure Point Recreation Area
Barrett Cove Recreation Area
Bagby Recreation Area

OTHER LARGE RESERVOIRS

Additional major reservoirs are included in this section for different reasons. San Luis Reservoir, the fifth largest storage facility in California, is a joint State-federal reservoir serving customers of both the SWP and CVP. Exempt from FERC regulation, recreation development there is primarily governed by California's Davis-Dolwig Act. The "Tri-Dam Reservoirs" (near the borders of Amador, Calaveras, and San Joaquin Counties) are each smaller than 500,000 ac-ft, but are in close proximity to one another and total nearly 1,000,000 ac-ft. The Tri-Dam* facilities consist of New Hogan Reservoir (federal), and Camanche and Pardee Reservoirs (owned and operated by the East Bay Municipal Utility District). The paired reservoirs of Lakes Nacimiento and San Antonio (Monterey County Water Resources Agency) store 700,000 ac-ft combined.

No other reservoirs (or logical reservoir-combinations) larger than 500,000 ac-ft exist in California (with the exception of Diamond Valley Reservoir in Southern California, which is not yet filled and is without completed recreation development). Some major reservoirs in other neighboring states, beyond the scope of this study but which could potentially be the subject of additional comparisons, are listed in the Discussion section.

* The "Tri-Dam" terminology dates from many years ago, when recreation at all three lakes was managed by a common entity, and is regarded by some as obsolete today. However, several local institutions and businesses are still associated with the name, and it remains an aptly descriptive term for the purposes of this report.

San Luis Reservoir

At a Glance:

Year Built:	1967
Storage (maf):	2.95
Surface Area (ac):	15,720
Average Annual Visitation:	800,000
Marinas (Moorage):	0 (0)
Campgrounds (# of sites):	5 (194)
Picnic Units (Assoc. Parking):	~500 (~500)
Boat Ramp Lanes (Parking):	22 (530)

Other Features: Equestrian Camp; Large Beach; 250+ Self-Contained Camping Spots

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The San Luis Complex includes San Luis Reservoir, O'Neill Forebay and Los Banos Detention Reservoir--waters that experience little surface fluctuation. San Luis Reservoir itself is an off-stream storage facility, full in spring in most years and receding (typically about 100 feet) throughout summer and fall as water supply and power needs are met.

Nestled in the grassy hills of the western San Joaquin Valley near Pacheco Pass, about 12 miles west of Los Banos (population 30,000) and 30 miles east of Gilroy (population 50,000), the area around San Luis Reservoir and O'Neill Forebay is subject to frequent strong and sudden winds. Nonetheless, San Luis Reservoir State Recreation Area is popular for boating, sailboarding, camping, and picnicking. It is also popular with anglers as a striped bass fishery.

There are two developed and two primitive campgrounds among the three reservoirs, including the Medeiros Campground which has almost "unlimited" space. There are five boat ramps, plus expansive day use areas with lawns and beaches at O'Neill Forebay. All facilities are operated by the California Department of Parks and Recreation.

O'Neill Forebay receives most of the use because of its high-standard day-use development and gentle shoreline. San Luis Reservoir has two main points developed for vehicle access and few other opportunities to access its undeveloped shoreline (except by foot or boat). Los Banos Detention Reservoir is only developed on the east end--much of the reservoir occupies a steep-sided, roadless portion of canyon.

Information about the San Luis Reservoir State Recreation Area can be obtained from:

San Luis Reservoir State Recreation Area
31426 Gonzaga Road
Gustine, CA 95322
(209) 826-1196

San Luis Reservoir: Potential Alternative Outdoor Recreation Destinations (30-mile radius)

Rivers

- Merced River
- San Joaquin River
- San Benito River

Lakes

- Little Panoche Detention Reservoir
- Paicines Reservoir
- San Felipe Lake
- Coyote Reservoir
- N. Fork Pacheco Reservoir
- (O'Neill Forebay)
- (Los Banos Creek Reservoir)

Public Parks/Recreation Areas

- Merced National Wildlife Refuge
- San Luis National Wildlife Refuge
- Great Valley Grasslands SP
- China Island – North Grasslands Wildlife Area
- George J. Hatfield SRA
- Volta Wildlife Area
- Mud Slough Wildlife Area
- Los Banos Wildlife Area
- Hollister Hills SVRA
- San Juan Bautista SHP
- Henry W. Coe SP
- Pacheco SP
- Cottonwood Creek Wildlife Area
- O'Neill Forebay Wildlife Area

San Luis Reservoir: Facilities Identified and/or Visited During Inventory

Day Use Facilities/Access
Los Banos Creek Reservoir
Medeiros Area
Forebay/Aqueduct Interface
San Luis Creek Area
Fisherman Point
Willow Point
Goosehead Point
Lone Oak Bay Trailhead
Romero Shoreling Access
Romero View Parking
Romero Visitors Center
Highway 152 Turnout
Pacheco State Park
San Luis Res. Wildlife Area
Dinosaur Point

Campgrounds
Los Banos Reservoir - Boat Ramp
Los Banos Reservoir - Loop
Basalt
San Luis Creek Family Camp
Medeiros
San Luis Creek Group Camps

Public Boat Ramps
Los Banos Reservoir
Medeiros
Basalt
San Luis Creek
Dinosaur Point

"Tri-Dam" Reservoirs

At a Glance:

Year Built:	1929, 1963
Storage (maf):	0.96
Surface Area (ac):	14,240
Average Annual Visitation:	900,000
Marinas (Moorage):	4 (290)
Campgrounds (# of sites):	7 (~750)
Picnic Units (Assoc. Parking):	189 (~275)
Boat Ramp Lanes (Parking):	27 (~600)

Other Features: Group Camps; Extensive shoreline access at New Hogan only

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New Hogan, Camanche, and Pardee Reservoirs are clustered around the town of Valley Springs (population about 12,000) and are each only about a half-hour drive from the greater Stockton area (population 300,000). The latter two are facilities of the East Bay Municipal Utility District and were developed primarily for water supply (Mokelumne River); New Hogan was constructed by the U. S. Army Corps of Engineers for water supply and flood control (Calaveras River). All provide additional benefits today and collectively offer a broad range of recreation opportunities, in many ways similar to larger reservoirs; Pardee and Camanche are regulated by FERC under a single License.

New Hogan's facilities include three campgrounds, day-use and picnic areas, launch ramps and a marina. The lake supports a fine year-round warm-water fishery, with striped bass the most sought after trophy. There are numerous opportunities for free, relatively unregulated shoreline access. Annual surface fluctuation averages 35 feet or less--more moderate than many other large reservoirs.

Three recreation areas at Pardee and Camanche are expansive and operated by concessionaires. Shoreline access is restricted at both reservoirs, however, and there is negligible opportunity for undeveloped shoreline recreation outside the fee areas. Body contact with Pardee Lake is prohibited, but waterskiing and swimming is allowed at Camanche. These reservoirs are known for their bass fishing but are gaining a reputation as trout fishery after a few years of large trout plants; other species found in Lake Camanche include: catfish, crappie, bluegill and other sunfish. A fee-for-fishing program at the South Shore of Camanche enhances the trout fishing opportunities there.

Information about the Tri-Dam Reservoirs can be obtained from:

Lake Camanche Recreation Company

North Shore	South Shore
2000 Camanche Road	11700 Wade Lane
Ione, CA 95640	Burson, CA 95225
(209) 763-5121	(209) 763-5178

Lake Pardee Marina, Inc.
4900 Stony Creek Rd.
Ione, CA 95640
(209) 772-1472

U. S. Army Corps of Engineers
New Hogan Lake
2713 Hogan Dam Road
Valley Springs, CA 95252
(209) 772-1343

Tri–Dam Reservoirs: Potential Alternative Outdoor Recreation Destinations (30-mile radius)

Rivers

- Calaveras River
- Mokelumne River
- Cosumnes River
- Stanislaus River

Lakes

- Woodward Reservoir
- Tulloch Reservoir
- Salt Springs Valley Reservoir
- New Melones Lake
- Amador Lake
- Davis Lake
- Ranch Seco Lake
- Redhawk Lake

Public Parks/Recreation Areas

- Indian Grinding Rock SHP
- Rancho Seco Recreation Area
- Stanislaus National Forest

Other Recreation Areas

- Moaning Cave
- Cave City Caverns

Tri-Dam Reservoirs: Facilities Identified and/or Visited During Inventory

Day Use Facilities/Access	Campgrounds	Public Boat Ramps	Resorts and Marinas
Pardee Reservoir			
Mistletoe Fishing Access Area	Lakeview Campground	Lake Pardee Marina	Lake Pardee Marina
Campo Seco Staging Area	Oaks Campground		
Coast to Crest Trail			
Middle Bar Bridge			
Observation Point			
Porcupine Flat			
Blue Heron Point			
Pardee Shoreline			
Rainbow Point			
New Hogan Lake			
Wrinkle Cove	Acorn East	Acorn East Campground	New Hogan Marina
Mtn. Bike/Hiking Trail	Oak Knoll	Fiddleneck Day-Use Area	
Slate Creek	Coyote Point		
Whiskey Creek	Deer Flat		
Bear Creek			
Observation Point			
Monte Vista Trail			
Lake Camanche			
Cottonwood Day Use Area	Camanche Rec. Co., North	Camanche Rec. Area, N. Shore	Camanche Rec. Co., N.
China Gulch Trail	Camanche Rec. Co., South	Camanche Rec. Area, S. Shore	Camanche Rec. Co., S.
Tule Day Use Area	Riverview Campground		
Trout Pond	Oaks Campground		
	Over Flow Camp Area		
	Moccasin Campground		

Nacimiento; San Antonio

At a Glance:

Year Built:	1957, 1965
Storage (maf):	0.7
Surface Area (ac):	11,120
Average Annual Visitation:	600,000
Marinas (Moorage):	2 (220)
Campgrounds (# of sites):	3 (900)
Picnic Units (Assoc. Parking):	57 (260)
Boat Ramp Lanes (Parking):	25 (1,250)

Other Features: Many Group Camps; Group Picnic Sites; Resort Lodging Opportunities

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The paired reservoirs of Lakes Nacimiento and San Antonio comprise the Lake Nacimiento Recreation Area. Owned and operated by the Monterey County Water Resources Agency, these reservoirs are paired on either side of the San Luis Obispo-Monterey County line and are tributary to the Salinas River. They each have about 350,000 ac-ft of storage, but because of their close proximity and the related nature of the recreation operations there, we have considered them as we would a single 700,000 ac-ft "large reservoir" for the purposes of this report. The generating capacity of Nacimiento's hydroelectric unit is below the threshold requiring a FERC License. Recreation at both reservoirs is managed by the Monterey County Parks Department under agreements with concessionaires.

The nearest major towns to Nacimiento and San Antonio are King City and Paso Robles; the combined population of this region is about 45,000. Surrounding lands are primarily agricultural or military in nature. Unlike other reservoirs discussed in this report, there are relatively few other opportunities for reservoir-based or other freshwater recreation in the surrounding area. Lands along the nearby Salinas, Estrella, and Nacimiento Rivers are almost entirely private.

Lake Nacimiento's 165 shoreline-miles of coves and inlets are nestled among the grassy oak- and pine-studded slopes of San Luis Obispo County. Famous for its white bass fishing, it is the only lake in California stocked with this species. Both lakes also support black bass, crappie, catfish, and bluegill fisheries, but health advisories warn against eating more than one meal per month of Nacimiento's fish because of mercury contamination. Shoreline access is somewhat restricted with few roads, surrounding private property, and only one developed (and one overflow) recreation facility. The

Lake Nacimiento Resort offers its guests a wide range of vacationing options, from its tent and RV camping facilities or self-contained RV and rental trailers, all the way up to the fully furnished lake-view lodges.

Lake San Antonio has two developed recreation zones offering a range of camping and day use opportunities but, like Nacimiento, negligible other opportunity for public access to the lakeshore. This probably contributes to its attractiveness for bald eagles: it is reportedly one of the largest wintering habitats in California.

Information about Lakes Nacimiento and San Antonio can be obtained from:

Monterey County Parks Department
(805) 472-2311

Lake Nacimiento Resort
Star Route Box 2770
Bradley, CA 93426
(805) 238-3256

Lakes Nacimiento and San Antonio:
Potential Alternative Outdoor Recreation Destinations (30-mile radius)

Surface Water

- Pacific Ocean
- Whale Rock Reservoir
- Atascadero Lake County Park

Public Parks/Recreation Areas

- Sea Otter Game Refuge
- Silver Peak Wilderness
- William Randolph Hearst Memorial SB
- Sam Simeon SB
- Cayucos SB
- Morro Strand SB
- Morro Bay SP
- Hearst San Simeon State Historical Monument

Other Recreation Areas

- Los Padres National Forest
- Mission San Antonio
- Mission San Miguel

Lakes Nacmiento and San Antonio: Facilities Identified and/or Visited During Inventory

Lake Nacmiento

Day Use Facilities/Access	Campgrounds	Boat Launches
Lake Nacimiento Resort	(Lake Nacimiento Resort)	Lake Nacimiento Marina
Lake Nacimiento North Shore	Quail's Roost	Lake Nacimiento North Shore
	Sandy Point	
	Oak Knoll	
	Pine Knoll	**Resorts and Marinas**
	Eagle's Ridge	Lake Nacimiento Resort
	Rocky Canyon	

Lake San Antonio

Day Use Facilities	Campgrounds	Public Boat Ramps
North Shore	South Shore Campgrounds	Basham Point
Vista Point	Harden Youth CG Area	Harris Boat Ramp
Nature Trail	McCandless Spring	Main (Marina) Ramp
Basham Point	North Shore Loops	North Shore 1
Harris Creek Picnic Area		North Shore 2
Pleyto-Cemetary Road		
		Resorts and Marinas
		Lake San Antonio Resort

DISCUSSION AND COMPARATIVE TABLES

Pursuit of this inventory has made it clear that directly comparing "like" recreation facilities at various reservoirs is a difficult undertaking. One reason is because there are a wide range of standards: paved or unpaved parking; very generic or even run-down picnic areas versus modern ones with lawns, beaches, and other amenities; variably-sized/spaced campsites with or without utilities; etc. Another reason is the fact that many of the features which truly differentiate a certain facility, and make it a "special" destination to dedicated clientele, are not directly comparable to facilities at other locations. Removal of these "special" features from comparison however, leaving some "common denominator", often leaves the "raw numbers" out of context. For example, while it is possible to objectively count campgrounds, campsites, boat ramps and marinas, other intangibles (seasonal unavailability, management, location, etc.) can be an equally-important factor in a simple comparison. Simple comparisons (those between just two facilities) may be more easily undertaken; a complex comparison, simultaneously weighing the many facilities described herein, may best be left to academics and perhaps some future mathematical model. Nevertheless, the following pages summarize objective, consistent observations made at the most elemental level, and these results offer a basis for pursuing a simple comparison between specific facilities of the reader's choice.

Examination and comparison of levels of recreation facility development at California's major reservoirs make it clear that only a few common principles have guided this development. California State Parks have generally followed planning guidelines of some consistency between several State Recreation Areas, but in many other respects recreation development appears to have proceeded *in response* to levels of use occurring at respective reservoirs. Variations in zoning and land use also appear to have influenced the size, types, and management of recreation development surrounding reservoirs. There are few common standards of facility development among various operators other than expanding facilities when existing facilities become

repeatedly filled to capacity. Of course, the latter principle is often interpreted as "meeting public demand for recreation", the closest thing to a common objective among various recreation agencies' and regulators' mandates.

The tables and graphs accompanying this section can be broadly grouped into two types. First, the information collected from each reservoir and described on the preceding pages is assembled into simple tables that allow sorting, ranking, and other direct comparisons to be made. Second, the results of some simple statistical analyses are reported. The latter offer further insights into where there may exist significant relationships between numbers of certain facilities and reservoir size. Further discussion follows the accompanying tables.

Tables 2a and 2b summarize numbers and types of public and private, respectively, basic recreation facilities identified at each reservoir. Table 3 summarizes the fees charged at each reservoir (2000 recreation season) for use of typical public facilities. Table 4a combines public and private facility data (from Tables 2a and 2b) for the purposes of ranking, statistical analysis, and other comparisons; Table 4a also lists occurrences of other notable recreation opportunities associated with more traditional, quantifiable facilities. Table 4b develops the information from Table 4a by showing the relationship between numbers of various facilities and reservoir size (area and shoreline) and surrounding population. Tables 5a and 5b provide the same information, except the reservoirs are ranked to allow easier comparison of most variables (ranges for each variable are also easily discerned, by pairing the highest- and lowest-ranked values). Table 6 summarizes population distribution around each reservoir, and Figure 2 illustrates this information for easier comparison.

TABLE 2a. Public recreation area facility totals.

	Campgrounds/ Campsites	Picnic Sites/Parking	Boat Ramps Lanes/Parking	Floating RR	Other	Recreation Agency
Almanor	3/272	55/135	5/138	0	Archery Range	USFS, PG&E
Berryessa	0/0	93/440	2/71	3	Grp.Pic.; Abund.Undev.Pkg.	USBR
Don Pedro	3/550	~25/75	13/~600	6	Grp.Pic.; Undev.Boat-In Campsites	Turlock Irrig. Dist.
Folsom	2/170	~190/~1600	44/~1300	2	Eq.Camp.; Grp.Camps; Grp.Pic.; Boat-in+Hike-In Camps	DPR
Isabella	8/872	8/75+unltd.	14/105+unltd.	0	Grp.Camps; Open Shoreline Camping	USFS, County
McClure	5/614	165/430	13/~375	4	Archery Range;Grp.Pic.; Grp.Camps;Hang-Glide Access	Merced Irrig. Dist.
Millerton	2/173	150/270+	26/600+unltd	1	40 Boat-In Camps; Grp.Camps; Grp.Pics.; Eq.Trails	DPR
Nac./San Ant.	3/900	57/~260	20/900+	4	Many Grp. Camps; Grp.Pic.	County
New Melones	5/302	100/~260	17/490	2	2 Grp.Camps; Walk-In Fishing Access; Float Plane Access	USACE
Oroville	**7/312**	**~300/805**	**61/2300**	**7**	Eq.,Boat-in,Floating Camps; Group Camps+Picnics; 41mi Bike Tr.	DPR, DWR
Pine Flat	5/304	104/~265	8/~450	4	Grp.Camps; Some Boat-In Camps; O'night Coves	USACE
San Luis	5/194	>500/~500	22/530	0	Eq.Camp; Vast Beach; 250+ Self-Contained Camping	DPR
Shasta	18/319	54/~500	20/~650	6	OHV Area; Extensive Shoreline Camping; Boat-In, Group Camps	USFS
Trinity	13/493	36/77	13/300+	4	34 Boat-In Camps; Group Camps; Beaches	USFS
Tri-Dams	7/~750	189/~275	27/~600	13	Group Camps; Extensive shoreline access at New Hogan only	USACE, EBMUD

TABLE 2b. Private/concession recreation area facility totals.

	Campgrounds/ Campsites	Picnic Sites/Parking	Boat Ramps Lanes/Parking	Marinas/ Moorage	Other
Almanor	10/~325	0	8/150+	22/669	Group CG'S + ORG. Camps
Berryessa	6/635	59/~70	37/~480	7/1,500	
Don Pedro	0	0	0	2/251	
Folsom	0	39/10+	4/635	1/685	
Isabella	KOA only*	0	0	3/80	
McClure	negligible	negligible	0	3/336	(marinas part of public areas)
Millerton	0	0	0	1/500	
Nac./San Ant.	0	0	5/~350	2/220	numerous cabins, motel-type units
New Melones	0	0	0	1/225	float-plane access
Oroville	**0**	**0**	**0**	**2/1,160**	
Pine Flat	5/80+	10/10+	0	2/686	
San Luis	0	0	0	0	
Shasta	9/~430	minimal	15/1,000	11/2,555	numerous cabins, motel-type units
Trinity	2/309	minimal	4/~200	5/782	
Tri-Dams	0	0	0	4/290	

* Several miles distant from the reservoir, this 70-unit campground is not included in totals.

TABLE 3. Fees for basic recreational use (US$), 2000.

Camping: First number (or range) is basic site, second is typical premium or hookup (may be public or private; "na" if not available).
(Note): Lake Berryessa has no public campgrounds, only private.
Day Use: Range indicates typical rates, over a variety of traditional types of reservoir recreation developments.
Boat Launch: Range of rates are normally *in addition to* Day Use fees.
Moor/Berth: Annual fee*; rates (and/or ranges) are approximate and representative.

	Camping	Day Use	Boat Launch	Moor/Berth
Almanor	15/na	0	0	500*
Berryessa	(20-24)	0	0,5,10,15	1,680
Don Pedro	15/22	5	5	1,200
Folsom	14/na	2-6	5	750-985
Isabella	14/na	0	5	400+
McClure	14/18	5.50	5	1,250
Millerton	12/20	6	5	775
Nac./San Ant.	20/27	6-10	5	1,250+
New Melones	14/na	0	0	1,500+
Oroville	14/20	3	5	1,200
Pine Flat	10/24	0-7	2	1,100
San Luis	10/15	5	5	**n/a**
Shasta	12/~18	0	5	1,300+
Trinity	5-12/25	0	5-15	450-950+
Tri-Dams	14/21	0-5.50	2-6	360-850

*****--Lake Almanor for six months only (no winter mooring).
n/a--no marina operation established

TABLE 4a. Reservoir characteristics, recreation facility totals (both public and private), other notable recreation opportunities, and estimated annual visitation, California's largest reservoirs.

RESERVOIR	Storage (1,000 ac-ft)	Surface Area (ac)	Shoreline (miles)	Elevation (feet)	Individual Camp-grounds	Total Campsites	Individual Picnic Sites	Picnic/Day Use Parking	Total Boat Ramp Lanes	Total Ramp Parking	Floating Restrooms	Number of Marinas	Total Moorage	Signed Equestrian Trail(s)	Signed Bicycle Trail(s)	Signed Hiking Trail(s)	Signed OHV Trail(s)/Area	Advertised Float Plane Access	Drive-to Undeveloped Shoreline	ADA-Accessible Fishing Site(s)	Designated Group Picnic Areas	Designated Group Campsites	Open Shoreline Camping	Developed Boat-In Camps	Equestrian Camping	Floating Campsites	Commercial Resort Lodging	Visitor Center w/Interpretive Displays	Fish Hatchery, with Tours	Designated Model Airplane Area	Designated Hang-Gliding Area	Designated Shooting Area	Designated Archery Range	Boating Club/Event Facility	Sandy, Developed Beach Area	Maintained Turf Areas	Playground Equipment	*Estimated* Annual Visitation (Visitor Days)
Almanor	1,300	28,500	52	4,500	13	600	55	135	13	300	0	22	669		X	X			X			X					X	X				X	X	X			150,000
Berryessa	1,600	20,700	165	440	6	635	152	510	39	550	3	7	1,500			X					X	X	X				X	X						X			1,000,000
Don Pedro	2,030	12,960	160	830	3	550	25	75	13	600	6	2	457			X					X	X	X	X				X						X	X		450,000
Folsom	1,010	11,400	75	475	2	150	230	1,600	48	1,935	2	1	685	X	X	X			X	X	X	X						X	X				X	X	X	X	2,500,000
Isabella	570	11,400	38	2,600	8	872	8	75	14	300	0	3	80			X	X		X			X	X					X	X	X		X					X	1,500,000
McClure	1,040	7,400	80	867	5	614	165	430	13	375	4	3	336			X				X	X	X									X			X	X	X	700,000
Millerton	520	4,900	51	570	2	173	150	270	26	600	3	1	500	X	X	X			X		X	X		X	X										X			600,000
Nac./San Ant.	700	11,120	225	800	3	900	57	260	25	1,250	4	2	220	X	X	X			X		X	X	X		X		X	X						X	X	X	600,000
New Melones	2,400	12,500	100	1,088	5	302	100	260	17	490	2	1	225	X	X	X		X				X						X		X					X		X	500,000
Oroville	**3,620**	**21,000**	**167**	**900**	**7**	**312**	**300**	**805**	**61**	**2,200**	**7**	**2**	**1,160**	X	X	X	X		X	X	X	X		X	X	X		X	X	X		X		X	X	X	X	**700,000**
Pine Flat	1,000	5,970	67	950	10	400	114	300	8	450	4	2	686			X			X	X	X	X						X							X	X	700,000
San Luis	2,950	15,720	89	500	4	194	500	500	22	530	0	0	0	X	X	X	X		X		X	X	X		X			X			X			X	X		800,000
Shasta	4,550	29,500	370	1,067	27	750	54	500	35	1,600	6	11	2,555			X	X		X			X	X	X			X	X								X	X	2,500,000
Trinity	2,590	17,280	145	2,370	15	802	36	77	17	500	4	5	782			X			X	X		X	X	X			X								X			750,000
Tri-Dams	960	14,240	140	500	7	750	189	275	27	600	13	4	290	X		X			X	X	X	X					X	X							X	X	X	900,000

TABLE 4b. Relationships between numbers of recreation facilities, reservoir characteristics, and surrounding population.

KEY (for Table 5)	RESERVOIR	Campsites/ Shore (mi.)	Campsites/ 1,000 acres	50-mi Pop./ Campsites	100-mi Pop./ Campsites	RampLanes/ Shore (mi.)	RampLanes/ 1,000 acres	50-mi Pop./ Ramp Lanes	100-mi Pop./ Ramp Lanes	Moorage/ Shore (mi.)	Moorage/ 1,000 acres	50-mi Pop./ Moorage	100-mi Pop./ Moorage
ALMA	Almanor	11.5	21.1	342	3,410	0.3	0.5	15,795	157,406	12.9	23.5	307	3,059
BERY	Berryessa	3.8	30.7	3,014	26,824	0.2	1.9	49,074	436,743	9.1	72.5	1,276	11,355
DONP	Don Pedro	3.4	42.4	2,291	21,640	0.1	1.0	96,906	915,519	2.9	35.3	2,757	26,043
FLSM	Folsom	2.0	13.2	28,704	114,246	0.6	4.2	89,701	357,018	9.1	60.1	6,286	25,017
ISAB	Isabella	22.9	76.5	772	4,213	0.4	1.2	48,111	262,431	2.1	7.0	8,419	45,925
MCCL	McClure	7.7	83.0	1,314	13,846	0.2	1.8	62,060	653,958	4.2	45.4	2,401	25,302
MILL	Millerton	3.4	35.3	10,069	32,777	0.5	5.3	67,000	218,096	9.8	102.0	3,484	11,341
N/SA	Nac./SA	4.0	80.9	436	4,074	0.1	2.2	15,696	146,680	1.0	19.8	1,784	16,668
NEWM	New Melones	3.0	24.2	4,429	43,429	0.2	1.4	78,676	771,498	2.3	18.0	5,944	58,291
OROV	**Oroville**	**1.9**	**14.9**	**2,581**	**20,468**	**0.4**	**2.9**	**13,200**	**104,690**	**6.9**	**55.2**	**694**	**5,505**
PINE	Pine Flat	6.0	67.0	4,650	13,288	0.1	1.3	232,480	664,389	10.2	114.9	2,711	7,748
SANL	San Luis	2.2	12.3	5,902	71,255	0.2	1.4	52,049	628,341	0.0	0.0	n/a	n/a
SHAS	Shasta	2.0	25.4	680	2,150	0.1	1.2	14,581	46,076	6.9	86.6	200	631
TRIN	Trinity	5.5	46.4	489	1,994	0.1	1.0	23,072	94,082	5.4	45.3	502	2,045
TRID	Tri-Dams	5.4	52.7	3,687	23,122	0.2	1.9	102,420	642,271	2.1	20.4	9,536	59,798

TABLE 5a. Ranking of reservoirs by size, select facility totals, and surrounding population (see Table 4b for key to abbreviations).

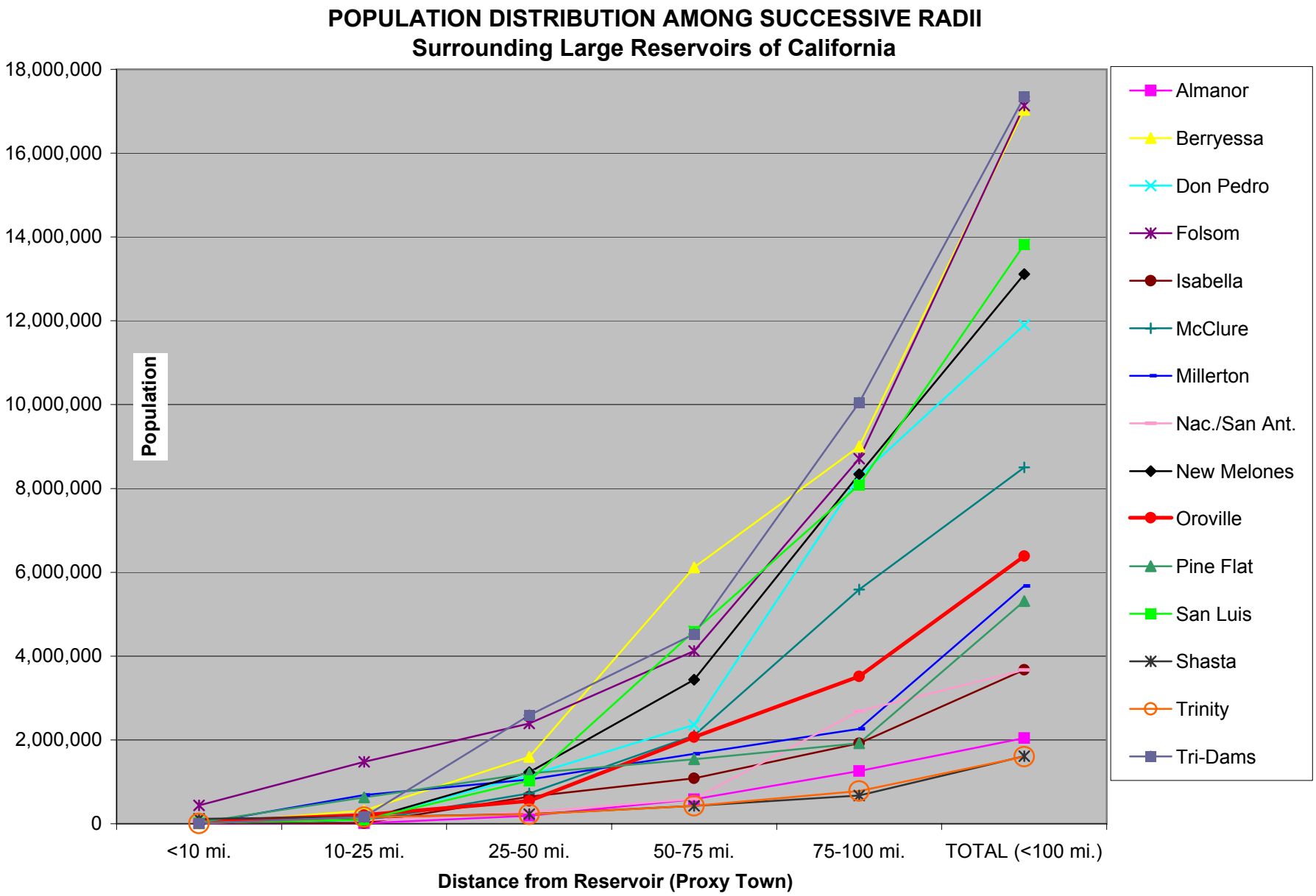
Storage (1,000 ac-ft)	Surface Area (ac)	Shoreline (miles)	Total Campsites	Individual Picnic Sites	Picnic/Day Use Parking	Total Boat Ramp Lanes	Total Ramp Parking	Total Moorage	Population within 10mi	Population within 50mi	Population within 100mi
SHAS (4550)	SHAS (29500)	SHAS (370)	N/SA (900)	SANL (500)	FLSM (1600)	**OROV (61)**	**OROV (2200)**	SHAS (2555)	FLSM (436816)	FLSM (4305650)	TRID (17341310)
OROV (3620)	ALMA (28500)	N/SA (225)	ISAB (872)	**OROV (300)**	**OROV (805)**	FLSM (48)	FLSM (1935)	BERY (1500)	SHAS (117258)	TRID (2765350)	FLSM (17136883)
SANL (2950)	**OROV (21000)**	**OROV (167)**	TRIN (800)	FLSM (230)	BERY (510)	BERY (39)	SHAS (1600)	**OROV (1160)**	**OROV (48246)**	BERY (1913887)	BERY (17032966)
TRIN (2590)	BERY (20700)	BERY (165)	SHAS (750)	TRID (189)	SANL (500)	SHAS (35)	N/SA (1250)	TRIN (782)	N/SA (32907)	PINE (1859840)	SANL (13823494)
NEWM (2400)	TRIN (17280)	DONP (160)	TRID (750)	MCCL (165)	SHAS (500)	TRID (27)	TRID (600)	PINE (686)	PINE (31536)	MILL (1741987)	NEWM (13115472)
DONP (2030)	SANL (15720)	TRIN (145)	BERY (635)	BERY (152)	MCCL (430)	MILL (26)	MILL (600)	FLSM (685)	SANL (22096)	NEWM (1337492)	DONP (11901751)
BERY (1600)	TRID (14240)	TRID (140)	MCCL (614)	MILL (150)	PINE (300)	N/SA (25)	DONP (600)	ALMA (669)	TRID (12699)	DONP (1259781)	MCCL (8501450)
ALMA (1300)	DONP (12960)	NEWM (100)	ALMA (600)	PINE (114)	TRID (275)	SANL (22)	BERY (550)	MILL (500)	NEWM (11699)	SANL (1145071)	**OROV (6386075)**
MCCL (1040)	NEWM (12500)	SANL (89)	DONP (550)	NEWM (100)	MILL (270)	NEWM (17)	SANL (530)	DONP (457)	MCCL (10504)	MCCL (806784)	MILL (5670504)
FLSM (1010)	FLSM (11400)	MCCL (80)	PINE (400)	N/SA (57)	NEWM (260)	TRIN (17)	TRIN (500)	MCCL (336)	ISAB (9668)	**OROV (805191)**	PINE (5315110)
PINE (1000)	ISAB (11400)	FLSM (75)	**OROV (312)**	ALMA (55)	N/SA (260)	ISAB (14)	NEWM (490)	TRID (290)	TRIN (5788)	ISAB (673550)	ISAB (3674039)
TRID (960)	N/SA (11120)	PINE (67)	NEWM (302)	SHAS (54)	ALMA (135)	MCCL (13)	PINE (450)	NEWM (225)	ALMA (5435)	SHAS (510335)	N/SA (3666989)
N/SA (700)	MCCL (7400)	ALMA (52)	SANL (194)	TRIN (36)	TRIN (77)	ALMA (13)	MCCL (375)	N/SA (220)	DONP (5042)	N/SA (392402)	ALMA (2046276)
ISAB (570)	PINE (5970)	MILL (51)	MILL (162)	DONP (25)	DONP (75)	DONP (13)	ISAB (300)	ISAB (80)	BERY (4472)	TRIN (392229)	SHAS (1612659)
MILL (520)	MILL (4900)	ISAB (38)	FLSM (150)	ISAB (8)	ISAB (75)	PINE (8)	ALMA (300)	SANL (0)	MILL (1828)	ALMA (205331)	TRIN (1599402)

TABLE 5b. Ranking of reservoirs by comparisons between facilities, reservoir size, and surrounding population (see Table 4b for key to abbreviations).

Campsites/ Shore (mi.)	Campsites/ 1,000 acres	50-mi Pop./ Campsite	100-mi Pop./ Campsite	Ramp Lanes/ Shore (mi.)	Ramp Lanes/ 1,000 acres	50-mi Pop./ Ramp Lane	100-mi Pop./ Ramp Lane	Moorage/ Shore (mi.)	Moorage/ 1,000 acres	50-mi Pop./ Mooring	100-mi Pop./ Mooring
ISAB (22.9)	MCCL (83)	ALMA (342)	TRIN (1999)	FLSM (0.6)	MILL (5.3)	**OROV (13200)**	SHAS (46076)	ALMA (12.9)	PINE (115)	SHAS (200)	SHAS (631)
ALMA (11.5)	N/SA (80.9)	N/SA (436)	SHAS (2150)	MILL (0.5)	FLSM (4.2)	SHAS (14581)	TRIN (94082)	PINE (10.2)	MILL (102)	ALMA (307)	TRIN (2045)
MCCL (7.7)	ISAB (68.6)	TRIN (490)	ALMA (3410)	ISAB (0.4)	**OROV (2.9)**	N/SA (15696)	**OROV (104690)**	MILL (9.8)	SHAS (87)	TRIN (502)	ALMA (3059)
PINE (6)	PINE (67)	SHAS (680)	N/SA (4074)	**OROV (0.4)**	N/SA (2.2)	ALMA (15795)	N/SA (146680)	FLSM (9.1)	BERY (72)	**OROV (694)**	**OROV (5505)**
TRIN (5.5)	TRID (52.7)	ISAB (772)	ISAB (4698)	ALMA (0.3)	TRID (1.9)	TRIN (23072)	ALMA (157406)	BERY (9.1)	FLSM (60)	BERY (1276)	PINE (7748)
TRID (5.4)	TRIN (46.3)	MCCL (1314)	PINE (13288)	SANL (0.2)	BERY (1.9)	ISAB (48111)	MILL (218096)	**OROV (6.9)**	**OROV (55)**	N/SA (1784)	MILL (11341)
N/SA (4)	DONP (42.4)	DONP (2291)	MCCL (13846)	BERY (0.2)	MCCL (1.8)	BERY (49074)	ISAB (262431)	SHAS (6.9)	MCCL (45)	MCCL (2401)	BERY (11355)
BERY (3.8)	MILL (33.1)	**OROV (2581)**	**OROV (20468)**	TRID (0.2)	SANL (1.4)	SANL (52049)	FLSM (357018)	TRIN (5.4)	TRIN (45)	PINE (2711)	N/SA (16668)
DONP (3.4)	BERY (30.7)	BERY (3014)	DONP (21640)	NEWM (0.2)	NEWM (1.4)	MCCL (62060)	BERY (436743)	MCCL (4.2)	DONP (35)	DONP (2757)	FLSM (25017)
MILL (3.2)	SHAS (25.4)	TRID (3687)	TRID (23122)	MCCL (0.2)	PINE (1.3)	MILL (67000)	SANL (628341)	DONP (2.9)	ALMA (23)	MILL (3484)	MCCL (25302)
NEWM (3)	NEWM (24.2)	NEWM (4429)	BERY (26824)	PINE (0.1)	ISAB (1.2)	NEWM (78676)	TRID (642271)	NEWM (2.3)	TRID (20)	NEWM (5944)	DONP (26043)
SANL (2.2)	ALMA (21.1)	PINE (4650)	MILL (35003)	TRIN (0.1)	SHAS (1.2)	FLSM (89701)	MCCL (653958)	ISAB (2.1)	N/SA (20)	FLSM (6286)	ISAB (45925)
SHAS (2)	**OROV (14.9)**	SANL (5902)	NEWM (43429)	N/SA (0.1)	DONP (1)	DONP (96906)	PINE (664389)	TRID (2.1)	NEWM (18)	ISAB (8419)	NEWM (58291)
FLSM (2)	FLSM (13.2)	MILL (10069)	SANL (71255)	SHAS (0.1)	TRIN (1)	TRID (102420)	NEWM (771498)	N/SA (1)	ISAB (7)	TRID (9536)	TRID (59798)
OROV (1.9)	SANL (12.3)	FLSM (28704)	FLSM (114246)	DONP (0.1)	ALMA (0.5)	PINE (232480)	DONP (915519)	SANL (0)	SANL (0)	SANL (n/a)	SANL (n/a)

TABLE 6. Population density of surrounding areas, California's largest reservoirs.													
											Annual		
Reservior	**Proxy Town**	**(ZipCode)**		**<10 mi.**	**10-25 mi.**	**25-50 mi.**	**50-75 mi.**	**75-100 mi.**	**TOTAL (<100 mi.)**		**Visitation**	**%of 0-25**	**%of <100**
											(rec-days)		
Almanor	Chester	96020		5,435	8,916	190,980	583,892	1,257,053	2,046,276		150,000	1045.2%	7.3%
Berryessa	Pope Valley	94567		4,472	315,729	1,593,686	6,115,236	9,003,843	17,032,966		1,000,000	312.3%	5.9%
Don Pedro	Chinese Camp	95309		5,042	104,382	1,150,357	2,361,306	8,280,664	11,901,751		450,000	411.2%	3.8%
Folsom	Folsom	95630		436,816	1,476,080	2,392,754	4,120,484	8,710,749	17,136,883		2,500,000	130.7%	14.6%
Isabella	Kernville	93238		9,668	15,768	648,114	1,082,073	1,918,416	3,674,039		1,500,000	5897.2%	40.8%
McClure	Coulterville	95311		10,504	69,178	727,102	2,103,730	5,590,936	8,501,450		700,000	878.5%	8.2%
Millerton	Friant	93626		1,828	683,111	1,057,048	1,667,509	2,261,008	5,670,504		600,000	87.6%	10.6%
Nac./San Ant.	San Miguel	93451		32,907	76,318	283,177	590,789	2,683,798	3,666,989		600,000	549.3%	16.4%
New Melones	Altaville	95222		11,699	98,396	1,227,397	3,436,876	8,341,104	13,115,472		500,000	454.2%	3.8%
Oroville	**Oroville**	**95965**		**48,246**	**210,452**	**546,493**	**2,065,398**	**3,515,486**	**6,386,075**		**700,000**	**270.6%**	**11.0%**
Pine Flat	Piedra	93649		31,536	627,641	1,200,663	1,537,181	1,918,089	5,315,110		700,000	106.2%	13.2%
San Luis	Los Banos	93635		22,096	97,417	1,025,558	4,592,987	8,085,436	13,823,494		800,000	669.4%	5.8%
Shasta	Shasta Lake	96079		117,258	164,460	228,617	428,896	673,428	1,612,659		2,500,000	887.4%	155.0%
Trinity	Lewiston	96052		5,788	159,580	226,861	428,958	778,215	1,599,402		750,000	453.5%	46.9%
Tri-Dams	Valley Springs	95252		12,699	161,880	2,590,771	4,527,042	10,048,918	17,341,310		900,000	515.5%	5.2%

FIGURE 2.


POPULATION DISTRIBUTION AMONG SUCCESSIVE RADII
Surrounding Large Reservoirs of California
18,000,000
16,000,000
14,000,000
12,000,000
10,000,000
8,000,000
6,000,000
4,000,000
2,000,000
0
Population
<10 mi.
10-25 mi.
25-50 mi.
50-75 mi.
75-100 mi.
TOTAL (<100 mi.)
Distance from Reservoir (Proxy Town)
Almanor
Berryessa
Don Pedro
Folsom
Isabella
McClure
Millerton
Nac./San Ant.
New Melones
Oroville
Pine Flat
San Luis
Shasta
Trinity
Tri-Dams

The preceding tables generally illustrate that Lake Oroville recreation facilities appear to compare favorably with other (presumably typical) large California reservoirs, in respect to the types, variety, and amounts of most traditional recreation facilities. Lake Oroville also provides several unique recreation facilities and opportunities, most notably floating campsites, but also an apparently unmatched combination and variety of facilities.

One way to evaluate whether development is related to reservoir size or other variables, and perhaps whether there are common principles that have guided development, is by correlation analysis. Table 7 is a correlation matrix developed from the information presented in Table 4a. Though complete statistical analysis of the data collected during this study is beyond the scope of this report (Table 7 may be a tool for consideration during future investigation and analysis), cursory analysis suggests several interesting generalizations may apply.

For example, number of campgrounds (but not number of campsites) and total moorage are the only variables that correlate well with all three size measurements (storage, surface area, shoreline miles). Lake Oroville conforms well with this generalization, ranking above the median both overall and on size-adjusted bases (Tables 5a and 5b). Estimated annual visitation appears to significantly correlate only with the amount of picnic/day use parking developed, and with a close-proximity population base, but some relationship ("almost significant") also probably exists between visitation and both the amount of boat ramp parking and total moorage. Picnic/day use parking is also significantly related to a close-proximity population base.

Interestingly, the only significant *negative* correlation exists between the number of picnic sites and day use parking spaces, and the total number of campsites. This suggests that development of reservoir recreation, in many cases, may have been driven by demand (or funding or management preference) for *either* day use or

TABLE 7. Correlation matrix, reservoir characteristics and recreation facilities, California's largest reservoirs.

n = 15 (df = 13) Critical $r_{.05}$ = 0.514 Critical $r_{.01}$ = 0.641	*Storage*	*Surface Area*	*Shoreline*	*Elevation*	*Campgrounds*	*Campsites*	*Picnic Sites*	*Picnic/DU Parking*	*Boat Ramp Lanes*	*Ramp Parking*	*Floating Restrooms*	*Marinas*	*Moorage*	*Annual Visitation*
Storage	1.000													
Surface Area	0.655	1.000												
Shoreline	0.651	0.538	1.000											
Elevation	-0.069	0.441	-0.254	1.000										
Campgrounds	0.593	0.686	0.585	0.397	1.000									
Campsites	-0.080	0.264	0.408	0.355	0.429	1.000								
Picnic Sites	0.233	-0.047	-0.173	-0.456	-0.345	-0.634	1.000							
Picnic/DU Parking	0.116	0.019	0.029	-0.413	-0.184	-0.530	0.502	1.000						
Boat Ramp Lanes	0.373	0.321	0.358	-0.390	-0.027	-0.290	0.421	0.739	1.000					
Ramp Parking	0.433	0.262	0.496	-0.339	0.100	-0.226	0.253	0.736	0.863	1.000				
Floating Restrooms	0.142	0.029	0.448	-0.406	0.123	0.245	-0.028	-0.027	0.261	0.261	1.000			
Marinas	0.126	0.758	0.149	0.755	0.597	0.347	-0.356	-0.219	-0.120	-0.145	-0.134	1.000		
Moorage	0.622	0.658	0.725	-0.047	0.734	0.134	-0.167	0.235	0.475	0.471	0.217	0.416	1.000	
Annual Visitation	0.227	0.181	0.372	-0.230	0.370	0.021	0.009	0.611	0.423	0.513	0.009	-0.049	0.500	1.000
Population within 10 mi	0.007	-0.003	0.042	-0.225	-0.053	-0.360	0.186	0.890	0.510	0.646	-0.087	-0.122	0.198	0.749
Population 10-25 mi.	-0.260	-0.332	-0.231	-0.359	-0.264	-0.578	0.201	0.768	0.402	0.426	-0.080	-0.282	0.091	0.505
Population 25-50 mi.	-0.344	-0.347	-0.261	-0.538	-0.468	-0.356	0.322	0.457	0.229	0.043	0.357	-0.375	-0.204	0.242
Population 50-75 mi.	-0.065	-0.097	-0.169	-0.556	-0.482	-0.390	0.579	0.406	0.320	-0.028	0.112	-0.315	-0.117	0.077
Population 75-100 mi.	-0.100	-0.188	-0.134	-0.557	-0.572	-0.319	0.443	0.336	0.185	-0.027	0.234	-0.380	-0.282	0.013
POP TOTAL (<100 mi.)	-0.138	-0.205	-0.177	-0.591	-0.559	-0.395	0.493	0.444	0.270	0.021	0.210	-0.387	-0.217	0.108

CORRELATION SIGNIFICANCE LEGEND

=	p < .01, positive
=	p < .05, positive
=	p < .05, negative
=	Suggestion of no relationship (r ~0)
=	Possible significance, but p > 0.05*

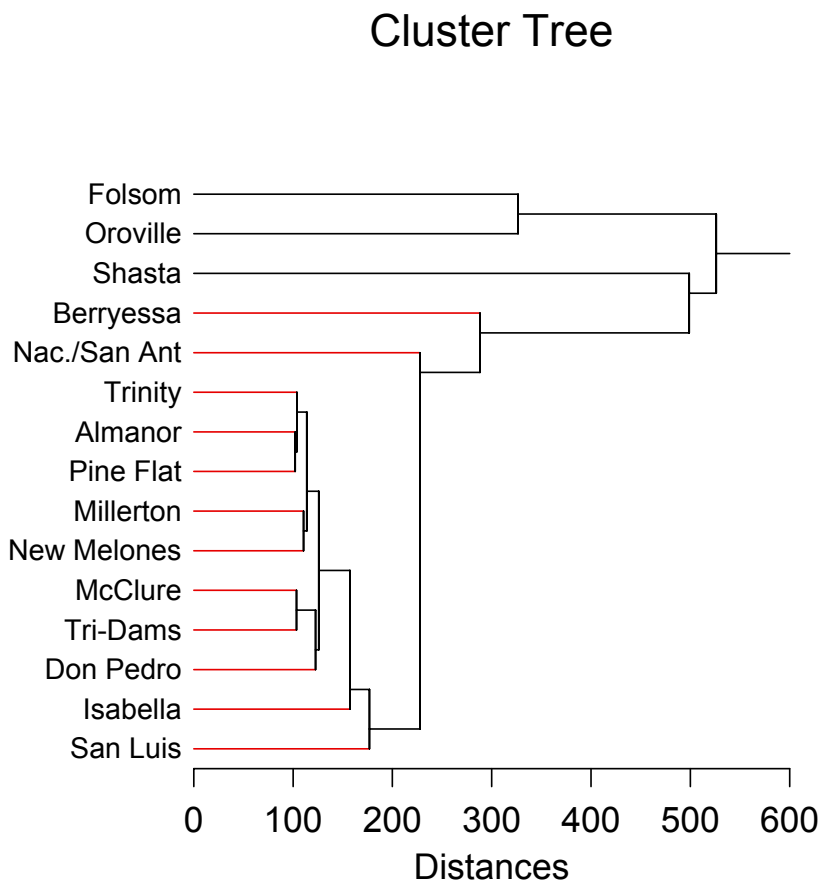
* Relatively large r, but doesn't meet conventional (95%) confidence criterion.

destination camping (but not necessarily both). Lake Oroville facilities could be classified among the former. Table 7 also suggests there are several variables that are completely unrelated to reservoir size, surrounding population, or estimated annual visitation (correlation close to zero).

Cluster analysis (Figure 3) is another method used to compare levels of *total* recreation development among reservoirs. While tabular data allow simple comparison for development level of any single type of facility, combining numbers of individual types of facilities gives a different, perhaps broader, illustration of how the overall level of recreation development is similar or dissimilar among reservoirs. Figure 3 suggests that Lake Oroville is most similar to Folsom Lake in this respect, with its next-nearest linkage being Shasta Lake. Most of the smaller reservoirs in this study are much more closely related to each other, in terms of total number of discrete recreation facilities.

The relative similarity of amount of recreation development among Oroville, Shasta, and Folsom is noteworthy because the recreation potential of the Oroville Facilities is most often compared to those two other reservoirs. However, annual attendance at Lake Oroville is estimated to be much lower than at Shasta and Folsom. Further exploration of the reasons for these similarities and dissimilarities is beyond the scope of this report, but the information presented herein is probably sufficient to allow informed discussion about possible relationships on a case-by-case basis.

FIGURE 3. Hierarchical clustering of combined recreation facility data by reservoir.



Distance metric is Euclidean distance
Single linkage method (nearest neighbor)

Cluster containing	*and*	Cluster containing	Were joined at distance	No. of members in new cluster
Pine Flat		Almanor	102.168	2
Tri-Dams		McClure	103.344	2
Trinity		Pine Flat	103.719	3
New Melones		Millerton	110.562	2
Trinity		New Melones	113.689	5
Don Pedro		Tri-Dams	122.497	3
Don Pedro		Trinity	125.822	8
Isabella		Don Pedro	157.086	9
Isabella		San Luis	176.862	10
Nac./San Ant.		Isabella	227.951	11
Berryessa		Nac./San Ant.	288.052	12
Oroville		Folsom	326.469	2
Shasta		Berryessa	498.769	13
Oroville		Shasta	525.911	15

OPPORTUNITIES FOR FUTURE STUDY

This comparative inventory is a snapshot in time. The status of California's recreational landscape can be affected by many factors, including economics and demographics, fads and trends, and water and weather conditions. However, it is assumed that major changes occur slowly enough that this report will be useful for many years to come. At the very least, it offers a foundation and benchmark for updating or expanding this information relatively easily.

It would the possible to expand this comparative inventory not only in time but also in space. All other reservoirs in California are smaller than those included in this report, but there are many significant reservoirs within California's urban areas that have large recreation developments. There are also similar, large reservoirs in other states. Table 8 lists reservoirs within California's neighboring states that meet the size criterion selected for this report.

It is worth mentioning again the realities involved when studying an area of this size and geographic complexity. The interpretation of data collected during this inventory, and how these data are presented herein, required a number of assumptions. These assumptions are clearly stated herein, and appear reasonable, but they illustrate the difficulties involved when blending objective and subjective information. Readers with additional information, updates, corrections, or other suggestions to offer are invited to provide such information to the Department of Water Resources. Please address such contributions to:

California Department of Water Resources
Environmental Services Office
Attention: Douglas Rischbieter
3251 "S" Street
Sacramento, California 95816-7017

Table 8. Large reservoirs in neighboring states.

OREGON

Applegate Lake
Lost Creek Reservoir
Hills Creek Reservoir
Fall Creek Reservoir/Complex
Green Peter Reservoir
Fern Ridge Reservoir

NEVADA

Rye Patch Reservoir
Lahontan Reservoir

UTAH

Sevier Bridge Reservoir
Strawberry Reservoir

WASHINGTON

Riffe Lake
Kachess Lake/Complex
Swift Creek Reservoir/Complex
Potholes Reservoir

REFERENCES

General Information:

California Recreational Lakes: http://www.anglernet.com/web/selectlk.htm

California Dams and Reservoirs: http://dlp.cs.berkeley.edu/dams/

Population Data by Zip Code: http://www.link-usa.com/zipcode

Statistical Analyses: http://www.spssscience.com/SYSTAT/index.cfm

Information by Reservoir:

Shasta Lake:..... http://www.anglernet.com/web/maps/shasta1.htm

Trinity Lake: http://www.anglernet.com/web/maps/trinity1.htm

New Melones Reservoir:..... http://www.anglernet.com/web/maps/nmalone1.htm

Lake Berryessa:.....http://www.anglernet.com/web/maps/bery1.htm

Folsom Lake: http://www.anglernet.com/web/maps/folsom1.htm

..... http://www.parks.ca.gov/default.asp?page_id=500

Pine Flat Lake:..... http://www.anglernet.com/web/maps/folsom1.htm

Isabella Lake.....http://www.kernvalley.com/news/lakefun.htm

Millerton Lake: http://www.anglernet.com/web/maps/miller1.htm

..... http://www.parks.ca.gov/default.asp?page_id=587

Lake Oroville:..... http://www.anglernet.com/web/maps/oro1.htm

..... http://www.cal-parks.ca.gov/default.asp?page_id=462

Don Pedro Reservoir: http://www.anglernet.com/web/maps/don1.htm

Lake Almanor:..... http://www.anglernet.com/web/maps/alman1.htm

Lake McClure:..... http://www.anglernet.com/web/maps/mclure1.htm

.....http://www.anglernet.com/web/maps/mcswain1.htm

San Luis Reservoir:..... http://www.parks.ca.gov/default.asp?page_id=558

“Tri-Dam” Reservoirs: http://www.anglernet.com/web/maps/cama1.htm

.....http://www.anglernet.com/web/maps/nhogan1.htm

..... http://www.anglernet.com/web/maps/pardee1.htm

Lakes Nacimiento and San Antonio .. http://www.tcsn.net/bherndon/sanantonio.htm

..... http://www.anglernet.com/web/maps/nacim1.htm